Reviews of *East-Central Illinois: Exploring the Beginnings*

Here is the life-long work of a wonder-filled woman. The care and completeness of her work, her compassion for our landscape and its deep history, her unquenchable desire to tell the story so precisely and so well . . . puts into your hands the very life of those who pioneered this place. Treat it well, learn from it, find the essence of the unchangeable threads of our history.

Bruce Hannon
Jubilee Professor, Liberal Arts and Sciences, University of Illinois, Urbana–Champaign

---

I was delighted to see that Elisabeth Hanson's detailed study of our area of east central Illinois will finally see the light in print. I first met her when she produced a map of the forested area of Champaign County before settlement. Not only did she use the notes of the government surveyors, she studied soil maps. Her skill as a graphic artist is outstanding. The level of depth that she has employed in her study of East Central Illinois is exceptional . . . it could serve a guide for anyone who would wish to do a similar study elsewhere. Elisabeth is an exceptional woman.

Dannel McCollum
native of Champaign County, Mayor of Champaign, IL (1987–1999), author of
"Remembering Champaign County" and "Your Life and Mine; Problems and Projects
in Conservation" and "A Guide to the Big Vermilion River System" (with James O. Smith)

Congratulations on the completion of your beautiful book, "East-Central Illiinois: Exploring the Beginnings." It both looks spectacular and brings a wealth of information together in one, easily accessible place. I'm amazed by how much I have learned by looking at your maps and reading the text.

I know that this has been a life-long effort on your part, and I am delighted that you were able to bring your vision to fruition. Congratulations again! The book is a gem.

Stephen Marshak
Professor of Geology, Director, School of Earth, Society and Environment,
University of Illinois, Urbana–Champaign

I am impressed and delighted with "East-Central Illinois: Exploring the Beginnings" by Elisabeth M. Hanson. She has done extensive research on the area and her text and graphics are truly amazing. Anyone interested in the development of the Illinois prairie should read this book.

Carol Kubitz
life-long resident of Central Illinois, retired graphic artist (UIUC)

More Reviews of *East-Central Illinois: Exploring the Beginnings*

What a wonderful and delightful project Mrs. Hanson has completed for understanding the land and settlement patterns in this important part of Illinois.

The text is quite fascinating and the maps are wonderful. One of the aspects I love is that this was written by a "citizen scientist," though with Elisabeth's background, she clearly received a wonderful education in what I would call geography. I was also thrilled to see the names of Liberty Hyde Bailey and Charles Bessey. As a master gardener and native plant master I encounter both of those names frequently.

Thanks so much to her for persevering in this important task which I know will prove invaluable for those in the east-central area of Illinois and likely also serve as a model for similar studies in other areas.

Judith Rice-Jones
former resident of Champaign-Urbana, retired librarian (UCCS–Colorado), geology student

---

Elisabeth Hanson is a true Renaissance woman. In late mid-life she began collecting the information for this book, going to original survey data and at times drawing her own maps from those data. Her book is a culmination of more than three decades of a determined and professional labor of love, a delight to read, and a priceless store of information about the prehistory and history of this unique area of Illinois. I hope Ms. Hanson and her work serve as an inspiration for other local historians to delve into, explore, and document their own equally small (and equally important) pieces of the United States."

Mary Severinghaus
Retired Associate Professor of Biology, Parkland College, Champaign, Illinois

---

Tomlinson Cemetery, a rural one-acre plot of prairie/savanna in the care of the Champaign County Forest Preserve District, was protected and maintained with dedication and perseverance by Elisabeth and Al Hanson, with the help of friends, for more than ten years. Elisabeth's work at the cemetery, and in the field, reflect the passion for protecting the environment that we strive to instill in the young and old alike every day. This book will provide the basis for many programs and teacher workshops for the Forest Preserve District so that we might carry on Elisabeth's hard work and commitment for generations to come.

Barb Oehlschlaeger-Garvey
Director, Museum and Education Department, Champaign County Forest Preserve District,
Museum of the Grand Prairie

Two tall grasses of East-Central Illinois. Right, big bluestem, a deep-rooted, native-prairie perennial that stores decayed-root nutrients in the soil. Left, corn, an introduced annual, planted on privately-owned farmland, converts fertilizer-enhanced soil nutrients into commercial harvest. Photo by author.

The Last of the Virgin Sod

By Rudolf Ruste

We broke today on the homestead
The last of the virgin sod,
And a haunting feeling oppressed me
That we marred a work of God.

A fragrance rose from the furrow,
A fragrance both fresh and old;
It was fresh with the dew of morning
Yet aged with time untold.

The creak of leather and clevis,
The rip of the coulter blade,
And we wreck what God with the labor
Of a million years has made.

I thought, while laying the last land,
Of the tropical sun and rains,
Of the jungles, glaciers, and oceans,
Which had helped to make these plains.

Of monsters, horrid and fearful,
Which reigned in the land we plow,
And it seemed to me so presumptuous
Of man to claim it now.

So when, today, on the homestead,
We finished the virgin sod
Is it strange I almost regretted
To have marred that work of God?

Quoted by Professor M. F. Miller (author's father) at the Annual Conference of the Missouri Agricultural Extension Service, December 15, 1937.

"For as Geography without History seemeth a carkasse without motion,
So History without Geography wandreth as a Vagrant
Without a certaine habitation."

John Smith, 1627

EAST-CENTRAL ILLINOIS

Exploring the Beginnings

- LANDFORMS & ECOSYSTEMS
- TERRITORY TO PUBLIC DOMAIN
- WILDERNESS TO REAL ESTATE

Elisabeth M. Hanson

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This book is dedicated to my great-grandfather, Isaac Demorest, who ventured westward into east-central Illinois in the major migration year of 1836. He built quarters for his family near present-day White Heath, and played an ambitious role in community leadership, until unexpected circumstances led to his early death. His story inspired my interest in undertaking this detailed investigation of the east-central Illinois area, so near my home.

Acknowledgements are due my family for their encouragement, networking and computer help.

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About the Author

This three-part East-Central Illinois Study was researched, graphics-designed, and explanatory text written, with the intent of reaching the interested lay reader. The author, a pre-computer-age graphic artist, cartographer, and statistics student, brings a unique perspective to her exacting investigations of the legendary black-soil-prairie region of east-central Illinois and its historical context. Elisabeth M. Hanson grew up in a singular academic household. Her father, M. F. Miller (1875–1965), soils professor and dean of agriculture at the University of Missouri, was an early student of the soils of the East-Central Basin, and a disciple of Cornell's land ethicist, Liberty Hyde Bailey. Her mother, Grace Ernst Miller, was a botanist of the short-grass prairie of Nebraska, and a devoted graduate student of Nebraska's charismatic "Father of American Taxonomy," Charles Bessey. From her father, the author learned the unique look of pure loess soil in a road cut; from her mother, the look of sideoats grama, a grass of the dry prairie. Such early orientations would help to motivate her interests many years later.

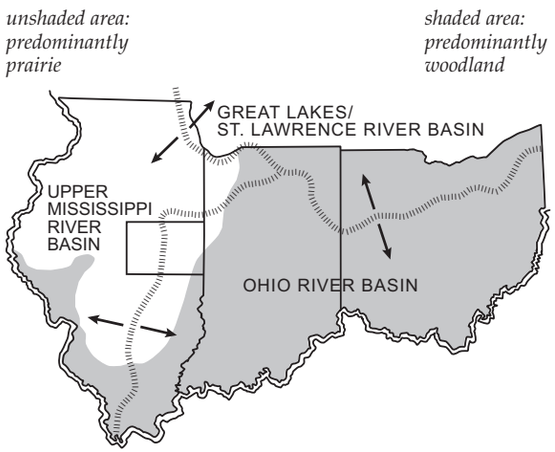
Although the author, with physicist husband, came to the Illinois Grand Prairie region from the Los Alamos Manhattan Project laboratory directly after World War II, it was not until 1967 (more than twenty years later) that she made an astonishing discovery. Her paternal grandmother, who died in Ohio before World War I, had, in fact, spent the first five years of her life, 1839–1844, as a pioneer child, just fifteen miles west of the author's home.

With a driving and sustained curiosity, then, about the natural and human-related sequence of events that created the characteristics of the region where she lived, and, later, to communicate to the lay reader a multidisciplinary understanding of them, the author chose a significant area for close study, and went to professionals at the Illinois State Surveys and the University of Illinois for guidance. She analyzed, and often interpreted cartographically, primary records at the Illinois State Archives and Museum in Springfield, at State Archives in Indiana and Ohio, and at the National Archives in Washington, D.C. She and her husband served fifteen years as hands-on stewards in area prairie restorations. They canoed rivers of the study area, where they found long-forgotten and overgrown historic sites.

Applying a bent for intuitively informative visuals, the author began her study by compiling maps that overlaid first purchases of government land onto a background of the prairie-timber dichotomy, as delineated by the first government surveys, thus demonstrating land preferences of the earliest pioneers. Eventually she wrote text to explain this and ensuing visuals that clearly showed informative correlations between cartographically-expressible variables. Finding it impractical to study events in a small area without understanding their part in the larger, related region, the author often enlarged the scope of study to include the southern half of "the Lands northwest of the River Ohio"—Ohio, Indiana, and Illinois.

The often-challenging task of translating her old-style, pen-and-ink-with-zipatone graphics into computer form for this publication was undertaken by Steven J. Holland and Megan Washburn, and by Heidi Richter and Kirsten Dennison at Precision Graphics.

Preface



The general geographic area considered in this book covers this tristate area, with detailed studies focusing on the East Central Illinois region in the rectangular box.

The Illinois black-soil-prairie region, shown unshaded on the map at the left, is judged to be among the best regions in the world for agricultural production, and is thus especially worthy of interest.

Mindful of forces in play across the whole Illinois prairie region, the author chooses to focus on a small, fairly homogeneous tract that represents the black-soil region. "The Study Area" is shown on the map as a small rectangle bounded on the west and east by human-surveyed lines: the Third Principal Meridian and the Illinois-Indiana State Line. The north-south boundaries are chosen to include the southern extreme of the "Bloomington Ridged Plain," a succession of end-moraines deposited during the Woodfordian Age.

The three intellectual themes of the narrative are presented as the three parts of the book.

Part I describes ancient geological developments of landform, of flora and fauna, and how the study region developed in response to the end of glaciation and the introduction of human-managed prairie ecology.

Part II moves into the early centuries of the recorded history of the region, and the ways in which the American tribal populations and the Euro-American populations interacted as territories under the dominion of native hunting populations were changed, by treaty, into the U.S. Public Domain.

Part III proceeds with the remarkable history of the surveying and management of the original prairie and its transformation into a cultural and economic resource with the features of private property.

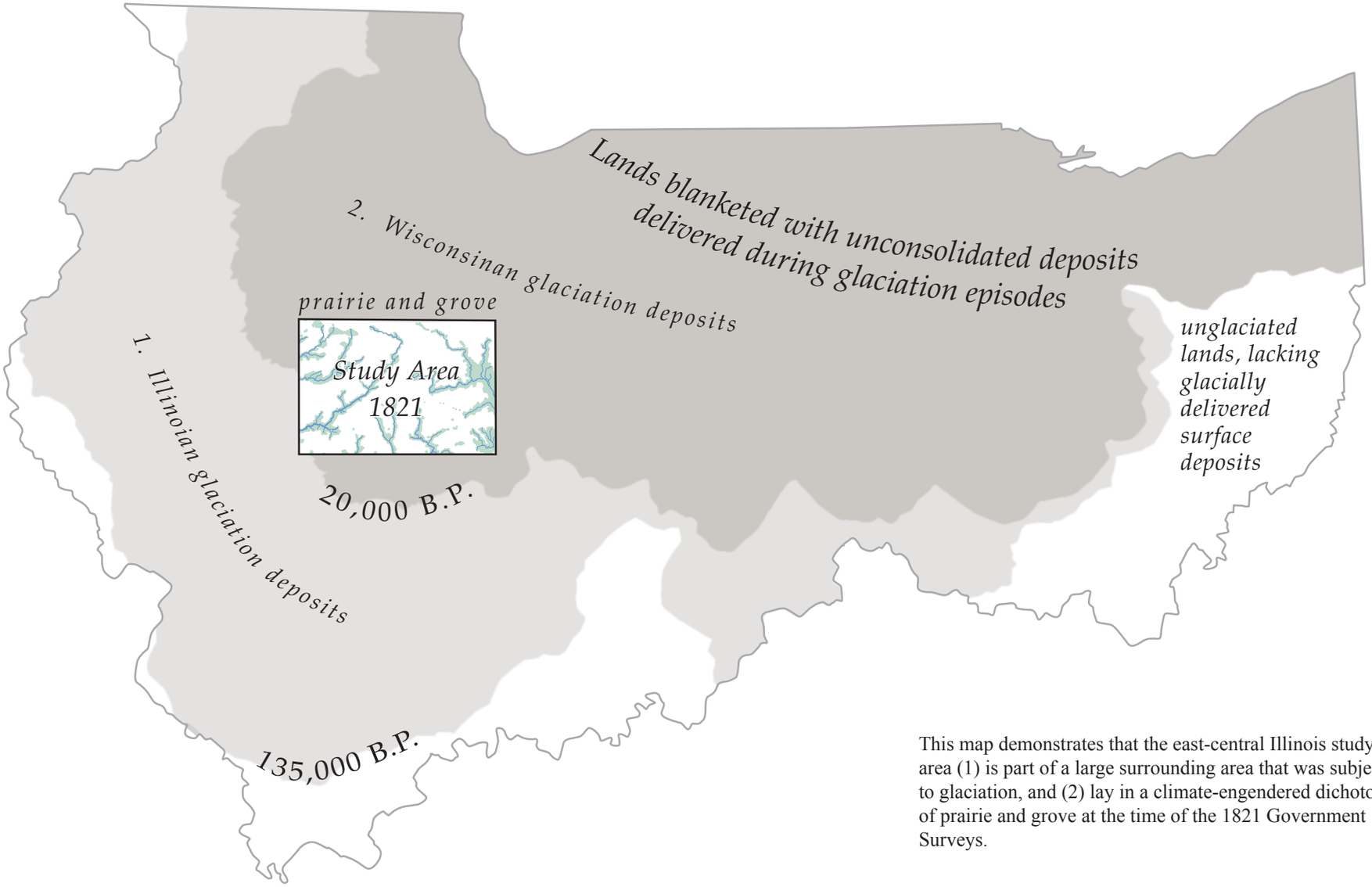
Each part is preceded by a map reminding the reader of the modern context of the study area, together with maps pointing out particular features important to the temporal context of the section's narrative.

Note: All dates and data in this text use raw radiocarbon years and no further attempt at calibration has been made.

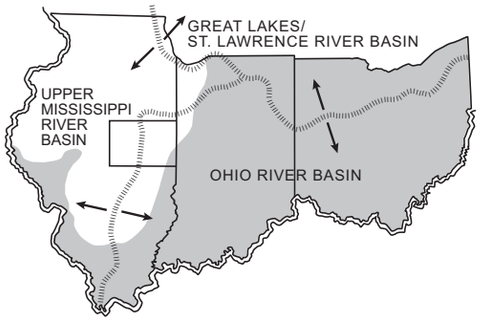
PART I

Landforms and Ecosystems in the Making

20,000 years



This map demonstrates that the east-central Illinois study area (1) is part of a large surrounding area that was subjected to glaciation, and (2) lay in a climate-engendered dichotomy of prairie and grove at the time of the 1821 Government Surveys.



REGIONAL ORIENTATION STUDIES in History/Geography: East-Central Illinois

- ☑ Part 1: Landforms and Ecosystems in the Making
- ☐ Part 2: Hunting Territory to U.S. Public Domain
- ☐ Part 3: Wilderness Becomes Real Estate

The Woodfordian Moraines: Our Imported Landscape

Glacial Ice to Prairie Fire: Interglacial Warming Drives Ecosystems

The Decipherers: Paleoscientists Find Evidence to Reconstruct, in Theory, the Sequence of Post-Glacial Ecosystems

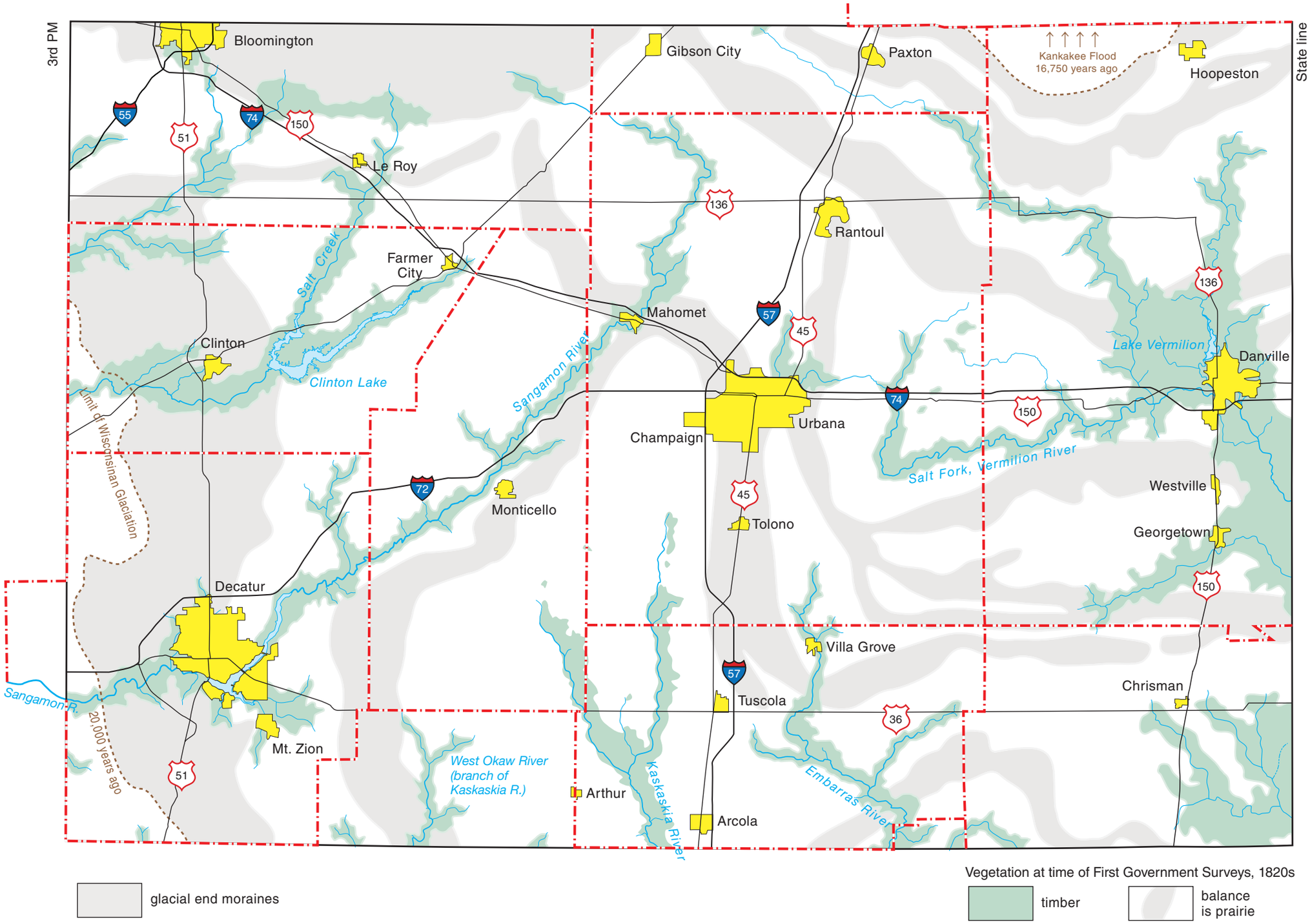
First North American: Projectile-Weapon Hunter, Manager of Fire, Modifier of Ecosystems

The Tall-Grass, Wet Prairie: Fire-Sustained Relict of a Climate Extreme?

Soil Color in the Prairie Peninsula

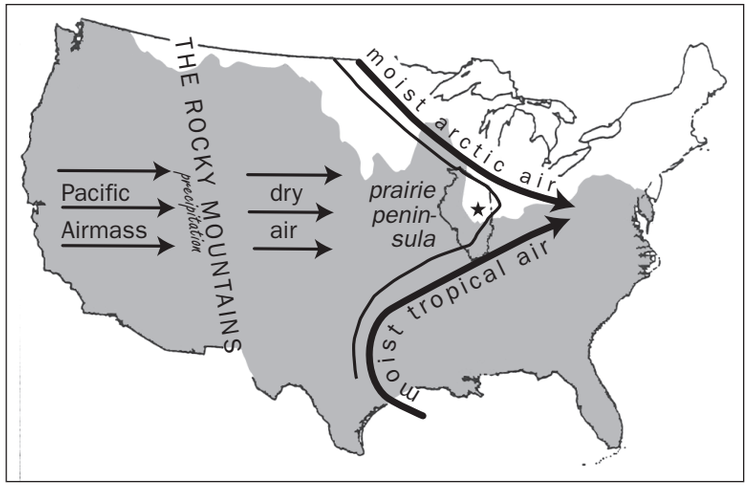
Appendix

The East-Central Illinois Study Area



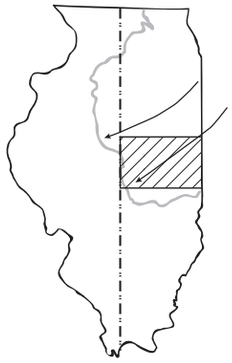
Evolving Landforms and Ecosystems in the Study Area

A concept of the human imagination—the compass-oriented straight line—versus the variable landforms of Nature



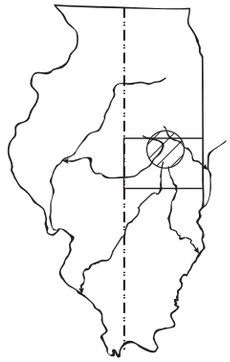
**Location of the east-central Illinois study area in relation to maximum glacial ice cover of Wisconsinan age at about 20,000 years ago (unshaded), and to the post-glacial continental air-mass pattern that induced the plant ecosystem of the Prairie Peninsula. The study area is significantly positioned with respect to each of these climate-derived systems. (Adapted from J. King, Information Sheet No. 14, Prairie Preservation Society of Ogle County, Illinois.)*

ELEMENTS OF PIONEER-ERA, EAST-CENTRAL ILLINOIS LANDSCAPE



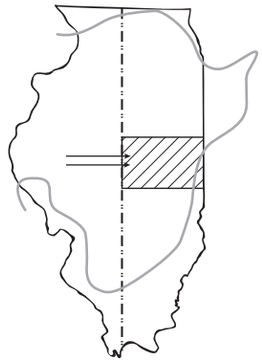
LANDFORM: Glacial End Moraines

Study area lies within forward extreme of a "ridged plain," created as glacial ice melted intermittently northeast-ward from maximum advance during Wisconsinan glaciation, depositing a series of end moraines and till plains.



DRAINAGE: from Headwater Circle

Nature of landscape north of headwater circle was influenced by dammed glacial lakes, which drained northward. Study area is drained by a fan of small rivers, flowing west through south to east.



FLORA: Prairie/Grove Mosaic

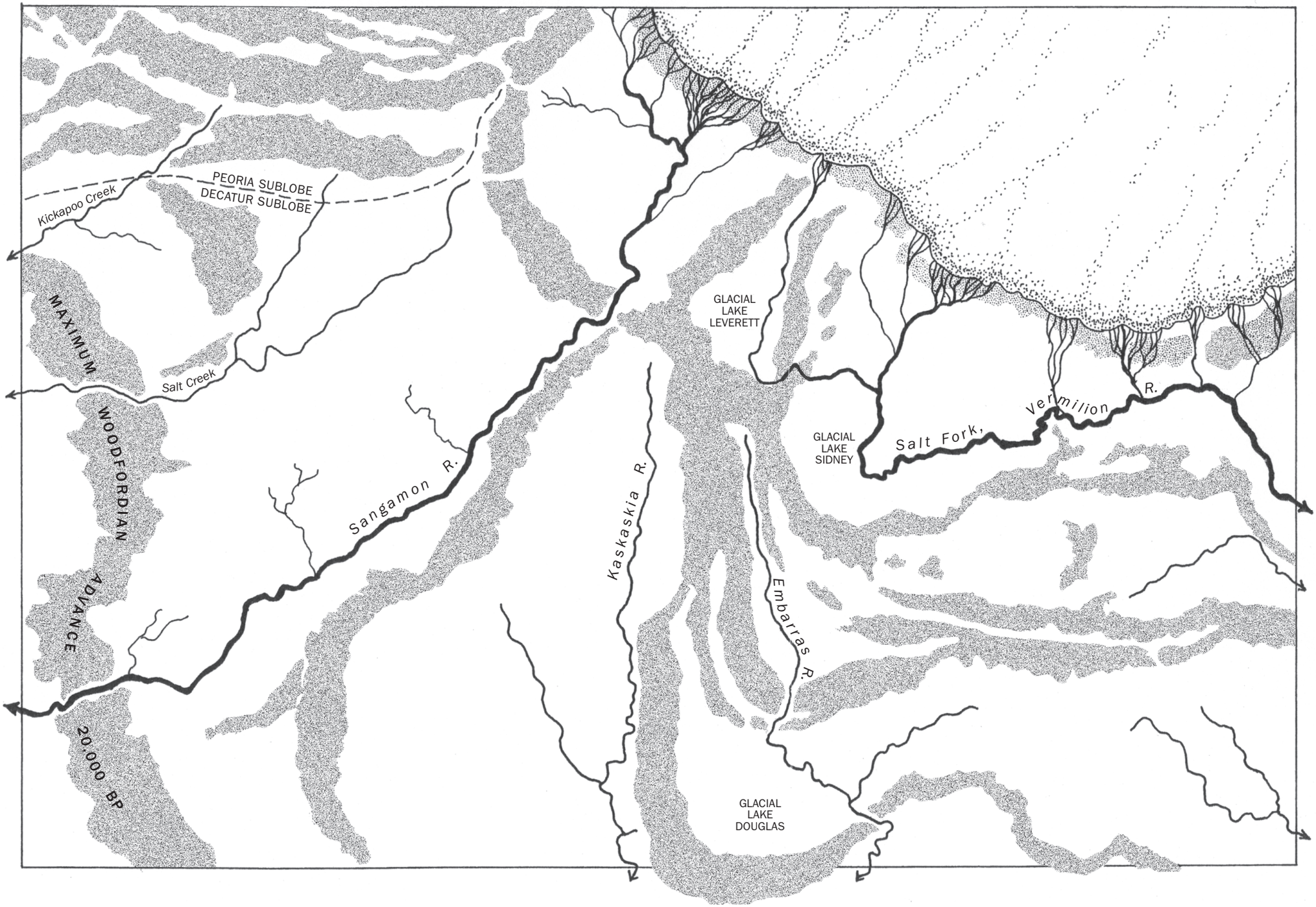
Study area lies at moistest forward extreme of the Prairie Peninsula in a tall-grass, wet prairie ecosystem. Timber occurs mainly along watercourses.

Map 1. Morainal Landforms, ~17,000 years ago

GLACIAL END MORAINES (shaded) AND GLACIAL TILL PLAINS (unshaded)

(caption on facing page)

Source: *Illinois State Geological Survey, Bulletin 94*



THE WOODFORDIAN MORAINES: Our *Imported* Landscape

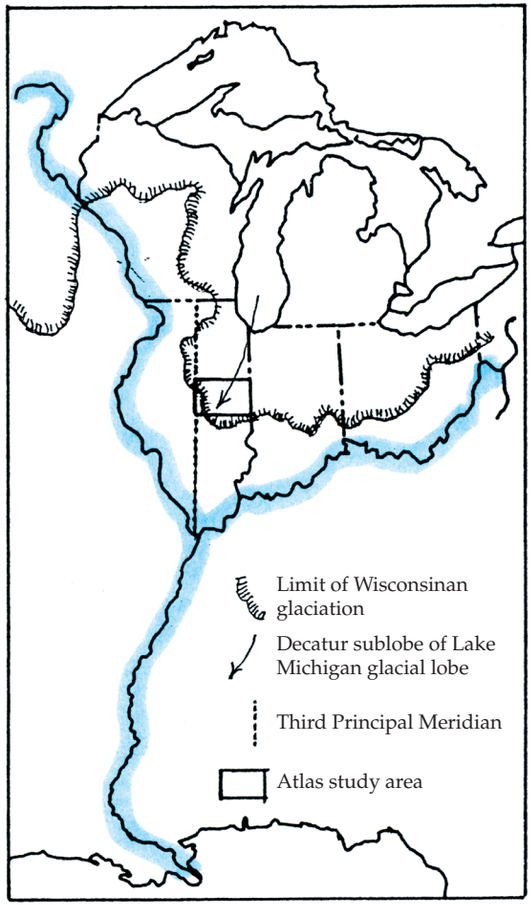
It is hard to imagine that ice can *flow*! As scientists explain it, the sheer weight of condensed, frozen snowfall, when stacked up to a depth of 160 feet or more, delivers a downward force capable of deforming crystalline structuring near the base of the pile. Ice bulk may then be squeezed plastically outward at the base under conditions of continuing ice buildup. In some cases, a film of meltwater may develop at the plane of earth contact, easing the bulky ice-slide in the direction of the outward force.

The improbable idea that ice, in recent geologic times, did indeed flow from the north, at an average rate of perhaps one-third mile per year (once overriding Illinois nearly to its southern tip), gained full acceptance by Earth Scientists only as recently as the mid-1800s. Since then, Pleistocene (*pl-ICE!-tocene*) Geologists have continually refined their understanding of an unimaginably complex series of glacial ice invasions, glacial "stands," and meltbacks, across Illinois. They have analyzed the bedrock scraping-offs and filling-ins; the end-of-conveyor-belt-type ridges of heaped-up rock debris (glacial end moraines); the random layers of rocky rubble-and-sand mix deposited in place by melting sheets of stationary ice (glacial till, or "ground moraines"); and, finally, the mantling over of the rugged terrain thus created with glacially ground "rock flour" (the basis of Illinois' *loess* soil), delivered by fierce winter winds from then seasonally dry floodplains where it had settled as silt from summer's great meltwater rivers. This third type of deposit is the province of a second sort of Earth Scientist, the Pedologist or Soil Scientist. (*Ped* meaning foot, the soil beneath our feet!)

Glacial deposits that shaped the surface landforms of our study area were made during a particular substage of the Wisconsinan glaciation, named by Geologists as "the Woodfordian substage," because typical examples are found in Woodford County, Illinois. Woodfordian moraines predominate in our study area.

The State of Illinois is the very focus of North America's glaciated lands—earning it the right to be called "The Glacier State." During the Illinoian age—the glacial age before the Wisconsinan age—ice advanced farther south than continental glacial ice anywhere else in all of Earth's northern hemisphere, ever, blanketing, at one time, nearly all of Illinois.

The distinctively recognizable riverine borders that define the southeast side and the entire west-through-southwest side of Illinois were carved out, bluff to bluff, by violent, miles-wide torrents carrying *all* of mid-North America's glacial meltwater past the river confluence at



A focus of the vast, interior basin of North America is "The Great River Fork"—the joining of the Ohio River to the Upper Mississippi at the toe of Illinois. In geologic history, most of the meltwater coursing its way seaward from sometimes-mile-high melting glaciers during the Late Pleistocene was collected into the river systems of The Great River Fork. Today, runoff from the foothills of Montana to the west slopes of the Appalachians is gathered into this Gulf-bound joining of waters. The Great River Fork was significant to the early land development of the United States, cradling the five states of the Old Northwest Territory. In the original U.S. Rectangular Survey, which followed close on the heels of Indian land cessions in Illinois Territory, the Federal Land Office chose a point at this river confluence to define the longitude of the surveyors' "Third Principal Meridian." Thus, measurements that determine property lines of about two-thirds of the legal real estate in the State of Illinois east of the Illinois River can be traced back to this major natural feature.

(facing page) MAP 1. MORAINAL LANDFORMS. For more than a million years now, ice ages, in about one-hundred-thousand-year major cycles, have been affecting lands in the northern hemisphere, cycling within cycles. Like ponderously slow, frozen tides, massive ice sheets have spread southward from periodically building concentrations of freezing precipitation in Canada. Advancing southward, retreating, and re-advancing repeatedly, ice eventually overrode the study area's ancient pre-glacial landscape several times, often stripping it to its bedrock contours. Each advancing ice front carried with it enormous quantities of rock debris scraped up and absorbed in passage. During periodic meltbacks, ridges and layers of this imported rocky rubble were deposited on top of the old landscape, filling old river valleys, and shaping, most recently, the surface contours and drainage patterns we know today, during what is known as the Wisconsinan glaciation. The actual soil that we walk on, that we farm and garden in, arrived with this most recent glacial invasion, when part of the transported rock, ground fine in the massive moving ice, settled as silt out of the wide meltwater rivers, then was whirled by fierce winds from winter-dry floodplains to blanket and soften the rough, new, morainal landscape. This map represents the east-central Illinois scene at the building of the Gifford end moraine, around 17,000 years ago.

the toe of Illinois, and on down toward the Gulf of Mexico during the late Pleistocene.

Ice fronts reaching Illinois pressed forth out of two major ice accumulation centers in Canada, first from the northwest and then, many thousands of years later, out of the northeast. Thus, a greater number of glacial advances and retreats worked over the surface of Illinois than in any other state in the Union (Iowa being a close second). Although three areas in Illinois are "driftless"—several counties at the foot of Illinois, the state's northwest tip, and a strip near St. Louis were missed by glacial advances—the vast majority of Illinois' old, pre-glacial landforms are forever lost or hidden beneath layers of glacially delivered earth materials. Any surface record of earlier pre-glacial ecosystems would be hard to find in the study area, with its "young" landforms.

In a way, the very land that east-central Illinois pioneers trod, as they followed ox team and plow, turning the virgin sod, was a foreign soil (except for its organic components). Composed of a mixture of immigrant materials, it had arrived here ice-borne, water-borne, and wind-borne, scraped up from the solid Precambrian (crystalline) rock beds of east-central Canada; from ancient, sedimentary (sea-bed deposited) rock underlying the Lake Michigan region; and also from bedrock closer to home. From a Geologist's long perspective, Illinois' loess soils contain new-mined bedrock material, still rich in mineral content.

Scientists have concluded that long intervals of "normal" climates—as Illinoians would name the climates of their own experience—prevailed between each of the major glaciations that involved the study area: the pre-Illinoian, which was mostly over-ridden by later advances, the Illinoian, and the Wisconsinan. They assign the name *inter*glacial to such moderate times. We are enjoying one now. But, according to current scientific theory, the present series of continental ice ages in the Northern Hemisphere may be expected to keep cycling indefinitely, in great, slow fluctuations unless, unimaginable eons in the future, forces that drive Continental Drift *may* slide major land bases toward the equator again, and thus out of the colder latitudes. (Continental

UNCONSOLIDATED

BENEATH OUR FEET:

3. Wind-deposited glacial "rock flour" (loess soil)—several feet at top are organically enriched

2. Ground-up rock debris in moraines, etc., deposited by melting glaciers

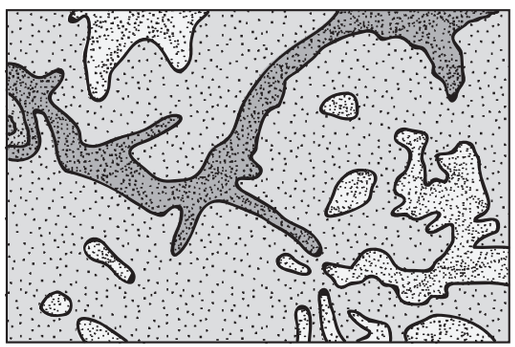
1. BEDROCK SURFACE

SOLID BEDROCK

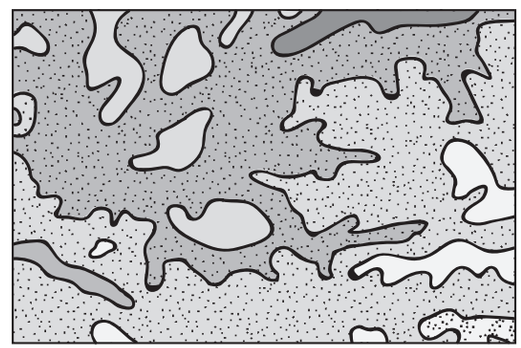
Sediments solidified into bedrock; top layers in study area include coal and limestone

Pre-Cambrian bedrock (granites, etc.), once molten

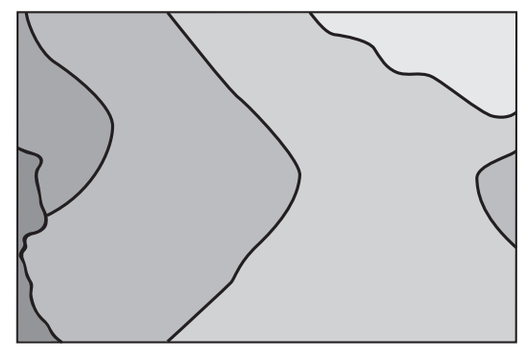
Earth's deeper crust, mantle, and molten core



1. CONTOUR MAP OF BEDROCK SURFACE: In this simplified map of the bedrock foundation beneath east-central Illinois, the darker the shade, the deeper the elevation. Geologists conclude that a major river meandered across the study area before the first glaciers arrived. They name this feature of the bedrock "the Mahomet Bedrock Valley" and have traced its sources as far east as the west-draining flank of the Appalachians. Now filled with glacially delivered rocky rubble and sand, the old valley stores quantities of slowly moving water, the major source of water for many communities in the study area.



2. THICKNESS OF GLACIAL TILL DEPOSITED ON BEDROCK: Although this map ignores elevation and shows thickness of deposits only, the location of the buried river valley is still evident in the dark-to-light shading that indicates deposits of sand and rock debris ranging from 400 feet thick (the darkest shade) to less than 50 feet thick on the bedrock high ground. As the glacier moved into this area, the ice flowed more slowly over the obstructing bedrock uplands, so that the lead edge of the ice front bulged forward between the bedrock highs forming what is now known as the "Decatur sublobe" of the Lake Michigan glacial lobe.



3. THICKNESS OF LOESS DEPOSITS ON TILL: This map clearly affirms that the fine-grained, wind-borne deposits that make up our loess soils originated in glacial meltwater river valleys on both sides of the study area. The thickest layers lie near the Illinois River, off-map to the west, and the Wabash River, closer off-map to the east. Both rivers were major carriers of meltwater. Moreover, it is obvious that the major winds blew from the west, dropping glacial dust farther from the Illinois River source.

(Maps adapted from H. B. Willman and J. C. Frye, *Pleistocene Stratigraphy of Illinois*, State Geological Survey Bulletin No. 94.)

glaciation can occur only where there is land at a cold latitude for an ice buildup to rest upon, and where that land extends toward the equator, providing a continuing continental base for the glacial ice to flow across.)

- -

Scientists theorize that, eventually, the North American continent is destined to experience a new advance of glacial ice, when frozen precipitation will begin to build up in Canada once more. They observe that several independent astronomic variables, of different cycle lengths, added together, determine how much heat the Earth receives from the Sun at any given time. Whenever the influences of all of these temperature variables chance to reach their lowest, coldest levels at the same time (perhaps every 100,000 years or so) a glacial age will be at its maximum. The mild climate of the current interglacial is believed to have promoted the birth and development of human civilization, which, during the last century and a half, has itself created one more independent (but one-time?) variable affecting Earth's temperatures: the burning of fossil fuels. Fossil fuels, which make the current lifestyle possible, create a carbon dioxide shield in the atmosphere, a greenhouse effect that unnaturally prolongs the present interglacial: "global warming." Scientific estimates on how long this carbon dioxide shield will continue to hold off the inevitable cycle to colder climate vary (astronomically!) from 100 years to 50,000 years.

How It Worked

The glacial end moraines, shown on Map 1, were each built up during the short interval when a debris-laden ice front was melting in place at approximately the same rate at which pressure from the Canadian ice source was driving the main ice mass forward. During that limited interval, the accumulated rock debris that had been scoured up and mixed into the forward-grinding ice mass was released onto the landscape, along with water from the melting ice in which the debris had been embedded. Dropping in place, the debris stacked up all along the near-stationary ice margin to form a ridge of loose-piled, unsorted rock—an end moraine. Some of the rock debris became waterborne for a time, settling to form a gravelly *outwash plain* in front of the end moraine. When meltwater torrents coalesced as rivers, debris settled to the bottom, sorted by size, in a so-called *river-train deposit*; the larger debris being deposited first, nearest the ice front, grading down to sand deposits further downstream. The Sangamon River in the study area offers an example of a river-train deposit.

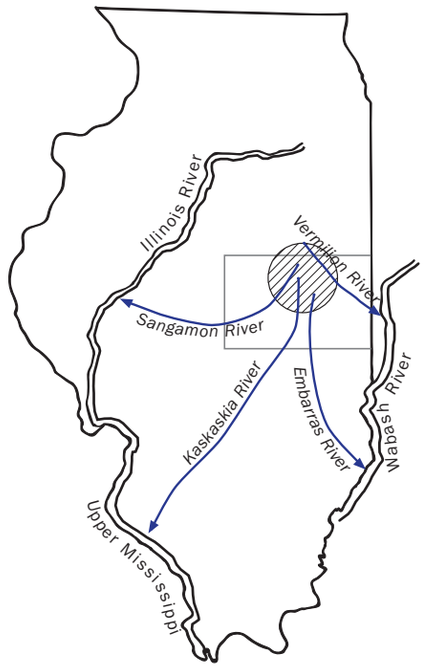
Whenever the enormously weighty bulk of the ice accumulation at the Canadian centers diminished during dry warming trends, the southward pressure stopped, leaving a stationary blanket of debris-filled ice to melt in place, depositing a new layer of glacial till across the terrain, forming what is called a *till plain*, or ground moraine, at the back of the end moraine.

The retreat of glaciation was not a uniform process. At intervals, renewed cold at the Canadian source would send a new, vigorous ice-front system to the fore, eroding out or burying some of the deposits left by earlier retreats. Map 1 illustrates just such a renewed advance. The lead edge of "The Illiana Morainic System" is shown overriding older moraines and building the Gifford Moraine, named after a town in its vicinity.

As an advancing ice front reached the stage of temporary equilibrium between forward motion and melting back—the *stand* of the glacier—we have seen that its two components, water and rock debris, were released onto the landscape. While the debris was settling to form end moraines, the meltwater was rushing in rivulets, rivers, and waterfalls off the surface of the enormous ice mass, and out from beneath it, finding a way through or around its own, or previously deposited, end moraines, which often blocked its path like walls of a reservoir.

Not infrequently, meltwater was dammed up for some time behind a previously deposited morainal ridge, so that a temporary glacial lake was created. Geologists have located layers of lacustrine (lake bottom) sediments in excavations at glacial lake sites in the study area. Several of these sites are shown on Map 1. The exceptionally flat terrain of Douglas County in our study area is a reminder of the old Glacial Lake Douglas lakebed of Woodfordian times. Eventually, the waters of these glacial lakes forced an opening through a weak spot in the moraine wall, establishing a river channel that would later carry meltwater from future glacial meltbacks as receding ice fronts melted northward.

Pleistocene Geologists faced a challenging puzzle when they tried to unravel the development of drainage in the confusing tangle of overlapping end moraines at the center of Champaign County in our study area. There,



WOODFORDIAN "HIGH"? On an elevated part of the morainal landscape left behind by the departing Wisconsinan ice, a circle merely forty miles in diameter encloses the headwaters of four significant rivers that flow to widely separated destinations, their courses directed by chance contours of the established glacial end moraines.

meltwater, ponding in a short-lived lake in back of an older moraine, seems to have broken *backward* through a weak spot in the western flank of another previously deposited moraine, thence flowing eastward to create the Saline Branch, which flows into the Vermilion River system, when, properly, it might have broken southward through some weak spot in the moraine downslope to join the Embarras River flowing southward through Champaign-Urbana (perhaps relieving that community of some of its frequent storm floods!).

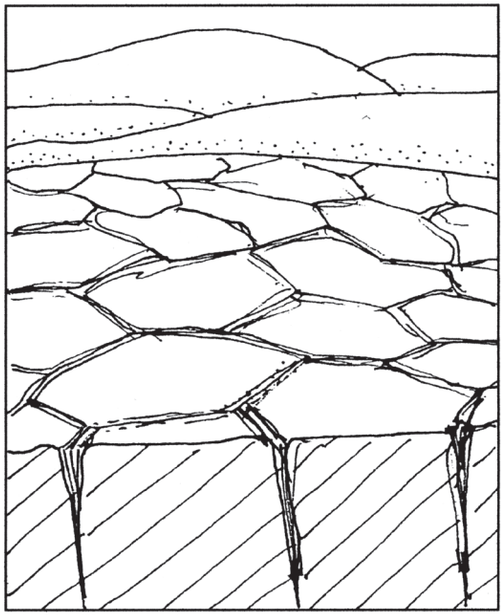
Meltwater rushing forth all along the base of the degrading ice cliff flowed out first as *braided streams*, which then joined to form rivers as they established channels. Meltwater from the western part of the Gifford glacier discovered the already established bed of the Sangamon River and flowed southwest, then westward, to join the Illinois River, while sturdy ridges of older end moraines diverted meltwater from the eastern segment of the Gifford glacier in the very opposite direction, into the developing Vermilion River system and thence into the Wabash River, a major meltwater drainage way. Surprisingly, the established channels of the Kaskaskia and Embarras rivers *between* the Sangamon and the Vermilion rivers, shielded by older end moraines, apparently took none of the meltwater from the Gifford glacial front.

On the Scene, as Glaciers Receded

Anthropologists speculate that human beings did not enter east-central Illinois until some time after 11,300 years BP (Before the Present), or roughly six thousand years after the building of the Gifford end moraine (about 17,250 BP). Although Modern Man was managing an existence on the opposite side of the globe while the Gifford moraine was being created about 17,000 years ago, no human observer was here contemporaneous to this map event. There was no one here to wonder at the immense wall of weathered ice intruding across the northeastern horizon, or to sense the distinct zone of frigid air as they ventured nearer to the melting glacial front. No one to hear, in midsummer, the incessant rush and roar of water escaping long ice imprisonment, or to seek shelter in midwinter from sky-darkening dust storms whipped up by a fierce wind out of the northwest as it crossed deep silt and sand beds deposited by meltwater rivers that had gone dry for the winter.

All across the study area, as wind-borne deposits deepened, the soil remained frozen year-round, except near the surface where it alternately froze and melted with the seasons. (Permafrost is the name given to a zone of persistently frozen subsoil.) With spring thaws, the "active" surface layer came to life, supporting a rich tundra vegetation of grasses, sedges, and dwarf shrubs. Then, with the first sharp freezes of early winter, the refreezing surface, particularly in low-lying, waterlogged areas, reacted to the extreme thermal-contraction stresses by cracking in the polygonal pattern of crazed china or dried mud. Deep cracks that had developed repetitively over the years reopened. Wedge-shaped in vertical cross-section, they opened down into the permafrost. No human being was here those many millennia ago to be startled by the explosive reports, sometimes even accompanied by mild earth tremors, that occurred as these "ice-wedge" cracks ripped open once again at the onset of winter. Even today, so many thousands of years later, visible evidence proves that permafrost did once actually exist in the study area. In a few low-lying areas of east-central Illinois, signs of old ice-wedge fields still survive, as "patterned ground," observable locally from the air after spring plowing (see photograph).

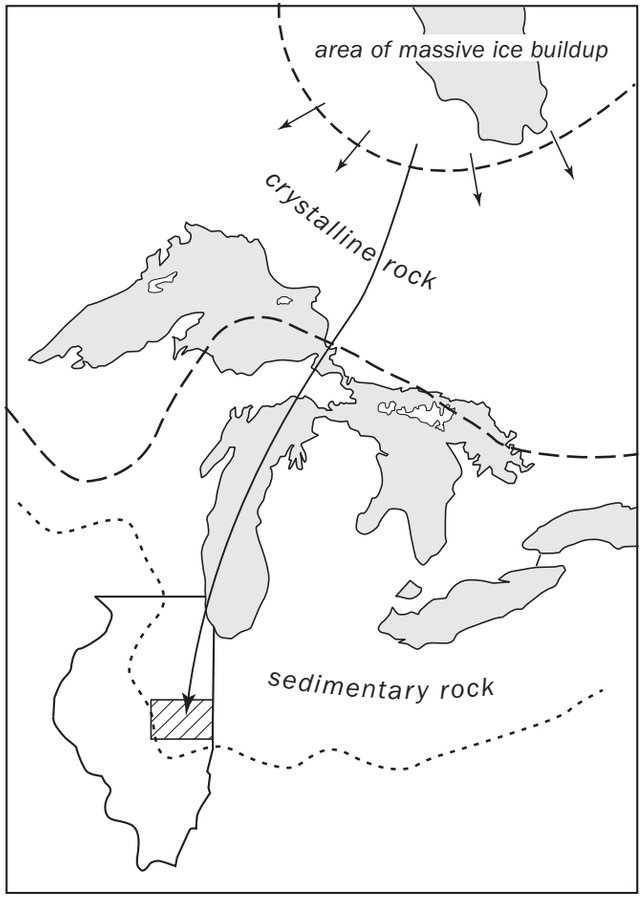
No human hunter was here in those days to make prey of hardy arctic animals pioneering into the zone vacated by ice, although the melting front might still be seen on



TOP: "Patterned ground" in the Woodfordian plain of east-central Illinois, photographed from the air soon after spring plowing. A 17,000-year-old holdover from Woodfordian times, these honeycomb-like surface patterns are reminders of old ice-wedge fields. In this example, from a location in the western part of the study area, the cracks caused depressed troughs to form near the surface, which became marshy in comparison to the surrounding ground. The wetland plants developed a darker soil, which shows up even after decades of draining and plowing. Not often discernible at ground level, evidence of the one-time existence of permafrost here may also be observed on Fairmount Quarry land in Vermilion County. (Photo by W. Hilton Johnson.)
BOTTOM: Diagrammatic drawing of ice-wedge cracks showing polygonal surface pattern and wedge-shaped cracks.

the northeastern horizon. The shaggy muskox and the wooly mammoth grazed tundra newly established on the ridges, while the fisher and the bog lemming gravitated to lower ground. Well south of the study area, where ground frost thawed out more each summer, the warmer soil supported scrub willow and a scattering of spruce trees, pioneers of the advancing boreal forest. There, and southward, the mastodon, the stag moose, the giant beaver, and many other Pleistocene-era species flourished; but these animals did not venture into the bleak, unpromising tundra of the study area, so near to the retreating ice front.

How may we imagine those long-ago times in our own study area? Locate the nearest rise of land in the farmland nearby (likely an end moraine). Go there, perhaps some late afternoon in summer when the opal-tinted clouds of mid-continent pile high. Standing at the top of the rise, survey the pastoral scene in front of you, the varied greens of the farm fields and the clustered buildings, dappled with sunlight and shadow. Try then to visualize the bleak, tundra pasture that once flourished there, with its scattering of curious-looking mammoth and muskox grazing. It was a new, unique landscape then, its contours newly modeled from ice-transported boulders, gravel, and dust speck, its water-runoff patterns new-scoured by meltwater torrents. It was a new "stage" for the long series of transformations, both natural and cultural, which have since proceeded across that new-made landscape—our landscape. The purpose of these regional, historical studies featuring east-central Illinois, atlas-style, is to replay the drama of those changes, one by one: the succession of climates bringing a parade of climate-dependent ecosystems; the arrival of people, first from the west, then from the east; and the ways that they used and transformed east-central Illinois into the land we know today.



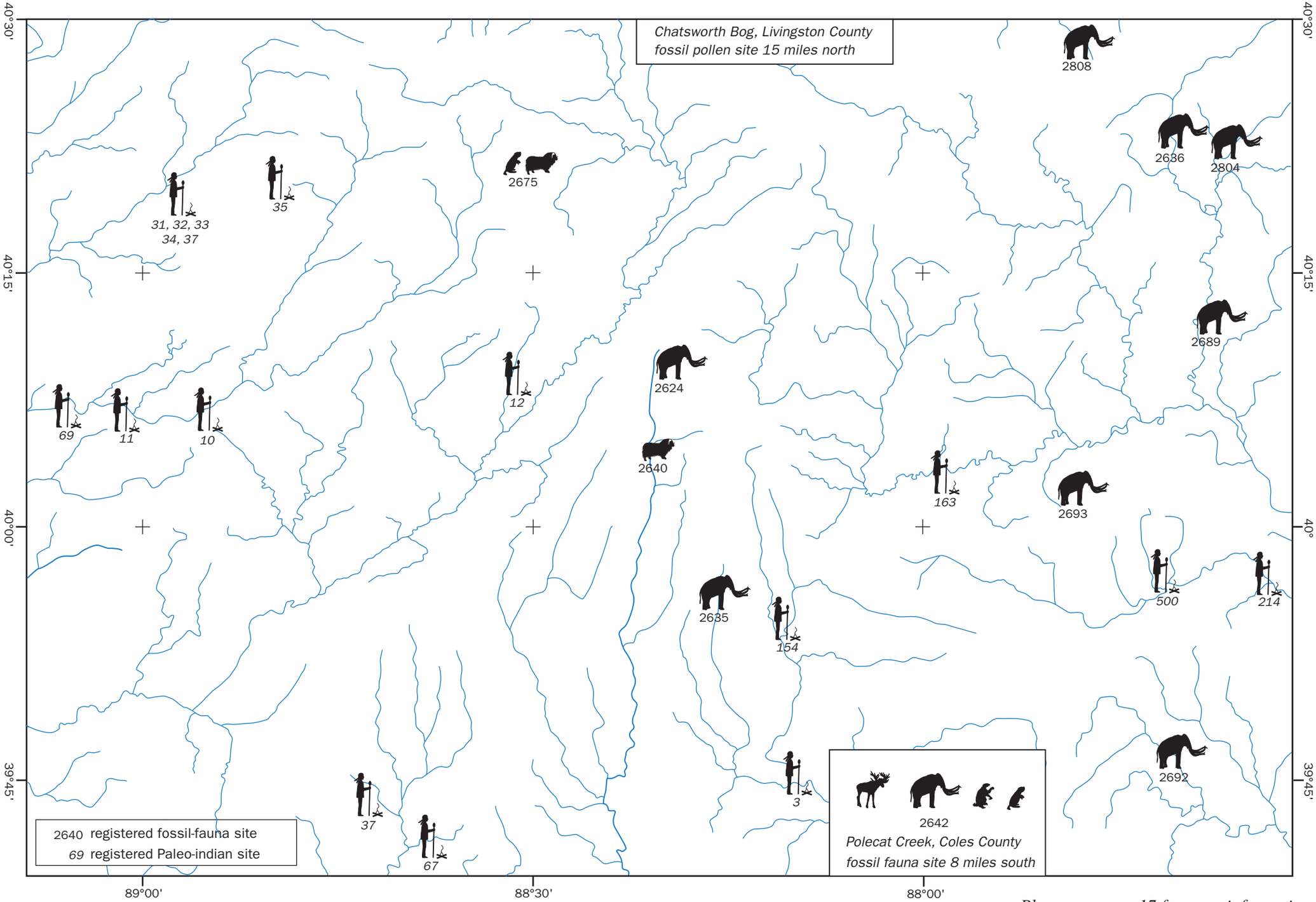
Glacial ice, spreading south from the Canadian center of ice buildup, crossed two types of bedrock on the way to the study area. North of the Great Lakes the grinding ice mass picked up crystalline rock (granites, etc.) from the Precambrian bedrock surface there. In the Great Lakes region and southward, the ice crossed sedimentary rockbeds (limestone, sandstone, etc.) to add to the icebound mix. As an exercise in rock identification, one might look for a natural deposit of stones in the study area (in a gravel pit or along a stream) and try to find an example from each of the two sources from which the rock was transported by ice.

Map 2. Post-Glacial Ecosystems

Registered Fossil Sites of Early Post-Glacial Fauna and Man

(caption on facing page)

Source: Illinois State Museum publications (Faunmap, etc.)



Please see page 17 for more information.

GLACIAL ICE to PRAIRIE FIRE:
Interglacial Warming Drives Ecosystems

The sequence of events that took place in east-central Illinois as the last surface ice melted out of the study area near the end of the Wisconsinan glaciation about 16,750 years ago had likely taken place, with variations, at the end of the Illinoian glaciation—the ice age cycle that preceded the Wisconsinan. An orderly series of warming climate zones proceeded, south to north, across our study area "stage," following the receding ice front. Lagging a little behind an arriving temperature zone came plant and animal communities best adapted to the new climate. Treeless tundra first dominated the scene at the beginning of the new interglacial, then spruce woodland, then varying types of deciduous forest and woodland—each distinctive plant assemblage having its thousands of years to flourish here. In their company came mammoth, mastodon, stag moose, giant beaver, giant ground sloth (a succession of big animals now extinct). Down to the smallest mouse, vole, and shrew, each animal species followed its *habitat*—its favored food sources, as produced by climate characteristics—northward across the morainal stage.

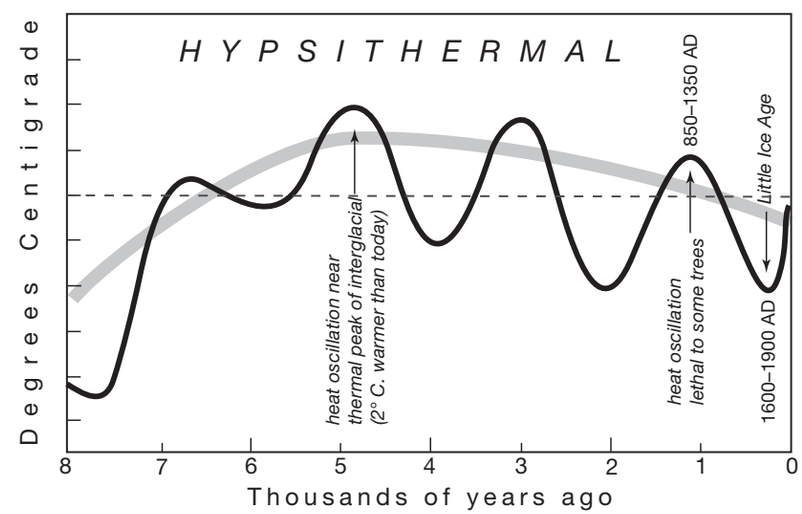
In the hundred-some thousand years of each recurring glacial cycle (see graphic, page 28), the average global temperature curve changes most rapidly as it climbs into the new interglacial period. Scientists estimate that maximum heat from the sun to the Earth was being delivered by about 10,000 years ago (see Time Chart, page 17), but its full thermal effects lagged several thousand years behind.

Through the millennia, as post-glacial warming zones crept northward through Illinois, a second weather dynamic was playing eastward. The north-south Rocky Mountain range, lying perpendicular to eastward-moving, water-laden air currents off the Pacific, draws down moisture as mountain rainfall, reducing precipitation to lands just east of the mountains in what is called "the Rocky Mountain rain shadow." This dried-out air current continues eastward and is funneled directly through central Illinois between moister air currents fluctuating from either side, establishing a climate and vegetation pattern here known as the "Prairie Peninsula" (an eastward projection of grassland into surrounding forested lands).

During a severe heat oscillation near the thermal peak of the new interglacial, hot, dry air funneling through our area destroyed upland timber here, restricting the range of most woody plants to the river valleys. Dry, steppe-like plant communities moved into our area, followed by some animal species out of the Western High Plains. Pronghorn antelope came as far east as Missouri, and the dry-plains pocket gopher spread into the Bloomington Ridged Plain (as the landforms left in our study area during Woodfordian glacial times are named). A long-resident species of browsing animal, the plentiful white-tailed deer (which survived the bigger animal extinctions some 5,000 years earlier), found the still-wooded big river valleys to be the best habitat in which to survive (as did the Middle Archaic Indian, who depended on the deer as prey).

During this unique time period (named the Hypsithermal and estimated to have peaked at about 5,000 years BP),

(facing page) MAP 2. POST-GLACIAL ECOSYSTEMS. As the last surface ice vanished beyond the northern horizon nearly 17,000 years ago, successively warmer climate zones followed northward across east-central Illinois. Ecosystems best adapted to each climate type flourished in sequence. First mammoth and muskox grazed on tundra still underlain with permafrost. Later, mastodon and stag moose browsed through spruce woodlands rooted into soil that warmed through each spring. By the time a "continental climate" had set in, today's familiar species, squirrel, raccoon, and white-tailed deer, were at home in mainly deciduous forest. By about 11,300 years ago, First North American had arrived at the northwest threshold of a temperate continent theretofore innocent of the spear and of "anthropogenic" fire. Inland hunters of the Clovis culture swept in a brief-lived wave of elevated population, south, then east through Illinois, thriving on a temporary abundance of unwary prey. As the "Early Archaic" culture prevailed in the area some 9,500 years ago, tundra, spruce, and ash regimes had given way to mesic-oak forest. The giant animals had gone extinct. Over the next several thousand years, our climate peaked thermally at the top of the interglacial temperature curve, while the Rocky Mountain rain shadow extended severe drought into Illinois. During this hot, dry "Hypsithermal" climate phase, the woodland ecosystem, including the people of the Middle Archaic culture here receded into the big-river valleys for survival. Some 5,000 years later, when Euro-American farmers arrived here, the forest had regained some of its former territory, as the climate became cooler and wetter. A tall-grass, wet prairie had replaced the dry, steppe-like grassland of the Hypsithermal, creating the prairie-and-grove mosaic of pioneer history.



As average global temperatures climbed to the top of the present interglacial thermal curve, smaller temperature oscillations broke the smoothness of the larger curve, periodically subjecting the study area to increased heat. Optimum heat occurred around 5,000 BP. (Adapted from Imbrie and Imbrie, Ice Ages: Solving the Mystery, *1979.)*

mean global temperatures are thought to have been only a few degrees warmer than before and after the period. A few degrees variation was all that was needed, however, to produce dramatic ecological effects in what can be described as a nature-made version of global warming. This "climatic optimum" at the thermal peak of the current interglacial brought notably hot, dry, and windy climate conditions to the study area.

Winding down toward the next glacial cycle, the historic climate extreme eventually moderated in the study area; the notably warm, dry climate zone drifted westward again. Although constantly fluctuating, the east-central Illinois climate, on average, became cooler and moister.

But, how can scientists possibly have arrived at such precise theories about the vanished past?

THE DECIPHERERS:
Paleoscientists Find Evidence to Reconstruct, in Theory, the Sequence of Post-Glacial Ecosystems

Man the Record Keeper, has been around to set down in writing his observations of living Nature for barely a moment in the long history of Life on Earth—only the past few thousand years. Understanding events preceding that "moment" is a job for today's detective scientist, whose recent successes in deciphering clues to the vast, pre-writing, natural history of Climate, Flora, Fauna, and Man on Earth are derived from just a scattering of fossil troves—small, buried libraries of the distant past. During the twentieth century, with the help of increasingly sophisticated technologies, Paleoscientists (scholars of the ancient, pre-written-history world) continually added to their accumulation of knowledge and hypothesis about natural history, much of which once seemed beyond the reach of our study capability. As in most of science, some hypotheses have arrived at full acceptance, while others are still being tested and debated.

This understanding of the study area is built upon hypothesis in a different way than the previous segment about glacial ages, where the existing physical landscape itself was the solid evidence to be deciphered. In this segment, about the ephemeral history of Climate and Life from 20,000 BP to 1800 AD, the variables have vanished with the past and the clues are very few.

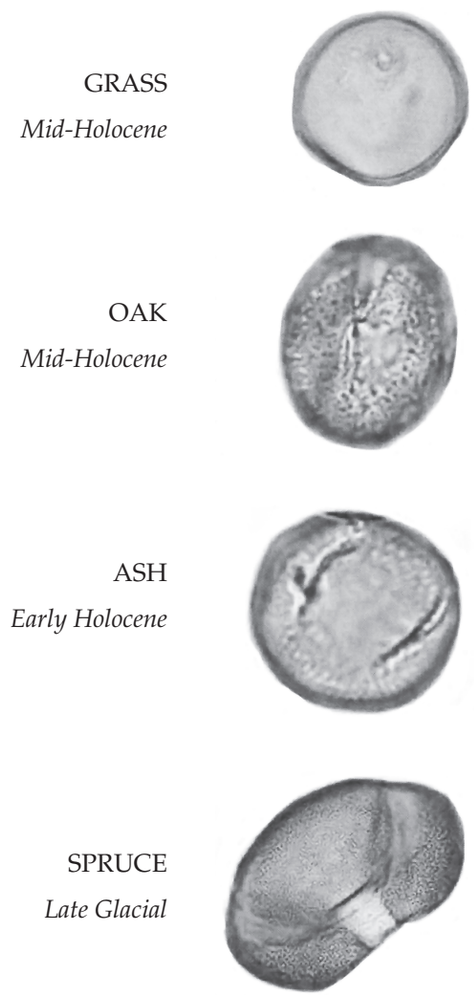
Deciphering the Paleo-PLANT (Flora) Record

Anyone who has observed Nature's efficiency at transforming whole leaves, stems, trimmings, and parings in the compost heap into the nondescript mass of brown and black humus (organic material) with which we enrich our gardens will appreciate the work of scientists who have found a way to describe and reconstruct long-vanished soft vegetation, climates, and landscapes of long ago.

During the twentieth century, scientists recognized that *POLLEN GRAINS* of ancient origin have been preserved for thousands of years in peat and lake muds (sediments) in locations where such wetlands have remained continuously wet. Not only did the tiny, hard-walled pollen grains survive, but, under magnification, each was identifiable from the structural design of its shell, which is unique to each genus and sometimes even to species.

In central Illinois, wetlands of this special kind, surviving intact, are in short supply. (The one nearest to the study area is the Chatsworth Bog in Livingston County.) They usually occupy the depressions (low spots on the landscape) left by large, separate blocks of glacial ice whose melting was delayed past that of exposed ice because thick layers of glacial till and loess soil chanced to build up rapidly around them, insulating them for a time from the warming temperatures. When the ice finally did melt, a water-filled depression occupied its place.

Upon the surface of such ponds, wind-borne pollens from windward-growing vegetation "rained" during each growing season, settling to the bottom in annual layers mixed with dust debris. To reconstruct the chronological story of the changing vegetation in the bog vicinity since early post-glacial times, Palynologists (pollen scientists) extract a cylindrical core down through the layered sediments that have accumulated since the ice melted. By identifying pollens in the core, from bottom to top, and carbon dating them, these investigators track the changing vegetation from the oldest to the most recent.



Photographic enlargements of millenia-old pollen grains of the type extracted from dated layers of Chatsworth Bog core samples (Illinois State Museum).

What had seemed impossible to us is thus accomplished: both the history of the procession of vanished *plant assemblages* in the study area and the *climate changes* through the 15,000 years following the melting of the ice that formed Chatsworth Bog are revealed to us.

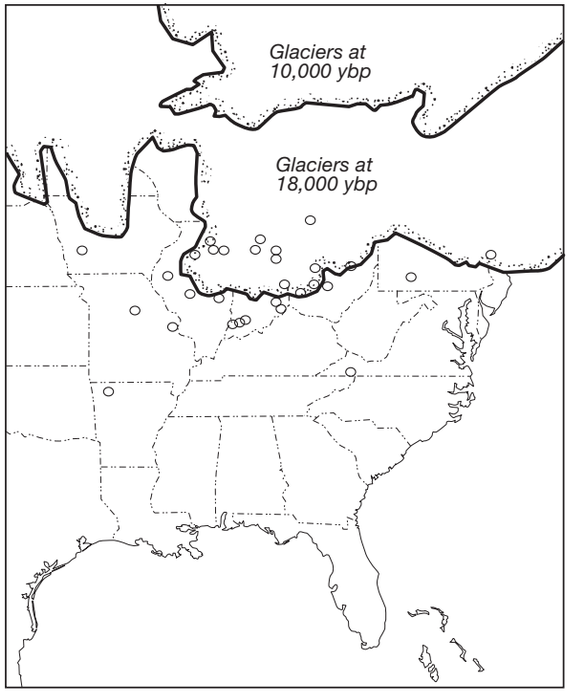
Deciphering Paleo-ANIMAL (Fauna) Records

Reconstructing the progression of *animal* life in east-central Illinois since glacial meltback began 20,000 years ago is a job for another type of detective scientist—the Paleobiologist, or student of prehistoric fauna. The clues a Paleobiologist seeks are in great contrast to the tiny pollen grains of the Palynologist—among his finds are fossil remains of giant, late-Pleistocene mammals. But a Paleobiologist is also trained to try to identify, by species, mere fragments of fossil bone from the whole range of prehistoric animals, down to the smallest, and including the least known.

Caches of animal fossils are found in several types of sites. In Illinois—mostly glacial-till-covered between its great boundary rivers—fossil sites may be found at one-time–post-glacial sloughs or swamps, in the glacial till, where animals, especially those now-extinct giant species, mired down and perished (see Map 2). Fossil bone deposits in these post-glacial wetlands do not represent the full array of animals present in the environment at the time, however. Around the perimeter of Illinois, and in the rugged terrains of Missouri and Indiana to the west and east of us, where limestone caves are common, fossil caches are found not only in one-time wetlands, but also layered chronologically in caves and in natural fissures, where a more representative, datable collection of the faunal array is found.

In reconstructing the full post-glacial faunal history in Illinois, Paleobiologists reason that varying populations of species whose fossils are found in surrounding areas likely existed here as well, although they may seldom have perished at our wetland sites. Thus, sites in adjoining states are studied to fill in the gaps.

Above: The extinct Giant Stag Moose, Cervalces scotti, *as it may have appeared in life. (From* The Living Museum, *a periodical of the Illinois State Museum, Vol. 50, No. 3.) Below: Map of known fossil sites for stag moose. (From the Illinois State Museum's* FAUNMAP, *Vol. 2.)*



Fossil study caves may be filled nearly to the ceiling with layered fossil bone deposits of small and medium-sized prey species, brought to the protected overhanging cave entrance, through the millennia, by predator mammals or by raptor birds to be eaten. Bones of the predator species themselves are seldom found in these caves, though. Naturally occurring limestone fissures (cracks deep into the ground) into which a random sample of animals have fallen and been fatally trapped may offer the most representative, and chronologically layered, fossil collections of the changing, post-glacial fauna.

By applying modern dating techniques, Paleobiologists can then give us a reasonably accurate picture of post-glacial *animal* history in central Illinois, to add to the Palynologists' history of *plant* life. The full, post-glacial ecosystem history of this area is thus in theory deciphered.

Deciphering the Post-Glacial Climate Sequence

The third type of Paleo-ecology detective-scientist who can help us reconstruct, in theory, the progression of ecosystems across our study area through the 20,000 years since the last "full glacial," is the Ecological Climatologist, who studies the dependence of the living world upon Climate, through time.

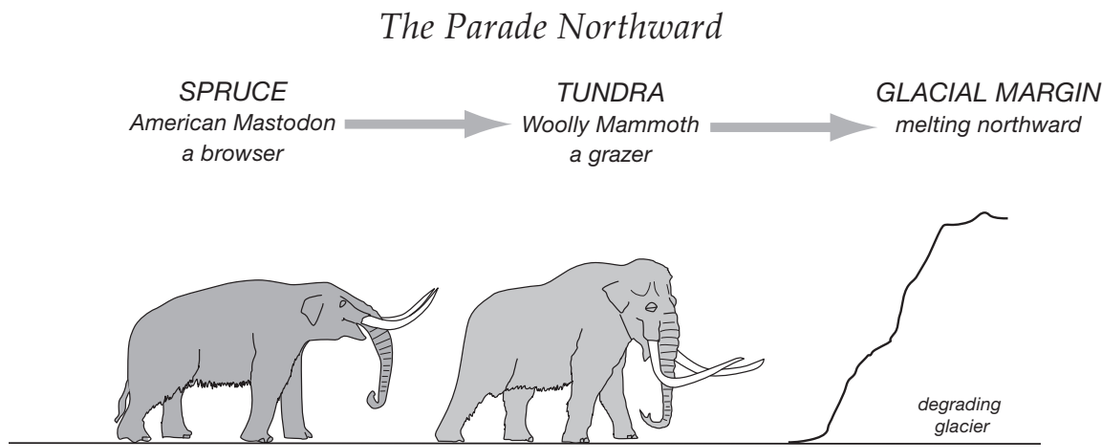
Of the most obvious, dynamic components that make up an ecosystem—Climate, Flora, Fauna—the last depends directly or indirectly on the second (carnivores eat herbivores; herbivores eat plants), and both depend on Climate, which is independent of them. Thus, if scientists know what sort of climate is preferred by each of the still-existing plant and animal species whose early fossils have been found and dated, they can construct a dated model of the sequence of climates at the fossil sites throughout history. The secrets of Nature's vanished past are finally revealed, in theory. (For an attempted reconstruction focused on the study area and covering the last 20,000 years, see the Time Chart, page 17.)

Just within the last century, scientists have pieced together much of the unwritten history of Climate and Life in east-central Illinois, from the late Wisconsinan glaciation that molded the brand new shape of our physical landscape here, 20,000–16,750 years BP, up to the time when Euro-Americans arrived on the scene with diaries, surveying instruments, plowshares, and domesticated animals, about 200 BP (1800 AD). After that date, the most rapid landscape changes in world history, as we know it, began to be implemented by the newcomer, serving his own survival—at the expense of the native occupiers.

Post-Glacial Ecosystems on Parade Northward

As the last surface ice finally disappeared beyond the northern horizon, blown-in seeds of the myriad small plants that are collectively called *tundra* had already found foothold in the moist loess surface soil, in the "active layer" thawed by spring suns. The raw glacial landscape had been clothed with sedges, grasses, alpine flowers, and tiny bushes. The pollen record had not yet begun accumulating, though, since Chatsworth Bog was still just a near-buried ice mass whose shape, when the ice eventually melted, would mold the bog cavity. But there can be no doubt that ours was a bleak tundra landscape for a time, underlain with permafrost, the low-lying areas "crazed," like huge antique plates, with ice wedge cracks. We don't really need the pollen record to confirm the one-time presence of tundra here. Fossil remains of two extinct animals known to have been tundra grazers—woolly mammoth and Harlan's muskox—have been discovered on study area farms. Scientists use this fact as an indicator of the presence of tundra vegetation.

One can only imagine now the small family groups of shaggy, elephant-like mammoth, moving ponderously across the treeless, morainal landscape, patiently grazing the great quantities of sedge, grass, and dwarf-bush vegetation required to fuel their massive frames. Whether they had natural enemies here is hard to guess. As we have pointed out, predator's bones are seldom found in fossil reservoirs.



Tundra vegetation pioneers into the zone left bare by the melting ice, and woolly mammoth, a grazer, follows. Open spruce woodland replaces tundra, spreading northward, and mastodon, a browser, moves in, feeding on the spruce.

Within a thousand years or so after glacial meltback, the soil had warmed. "Perma" no longer applied to the ground frost, which melted out in summer. The deep loess soil, now enriched with fungi and nitrogen fixed by earlier vegetation, had become receptive to roots put down by germinating spruce tree seeds blown in on the wind. This landscape, as viewed from the top of any study area end moraine, had come to resemble an open park of mixed spruce and tundra, the beginnings of the boreal (cold-weather) forest.

As the pioneering spruce trees matured, the elephant-like mastodon (a relative of the mammoth) moved into our area, feeding incessantly on its favorite food, the spruce vegetation. The mastodon co-existed with long-resident tundra grazers here (mammoth, muskox, etc.) until the thickening spruce woodland shaded out the tundra habitat, and the grazers moved northward, following the tundra pastures that flourished at the foot of the northward-receding glacier cliff. The mastodon must have found our area congenial; big, spruce-needle-grinding mastodon molars are still found occasionally at excavations for new construction sites.

Boreal creatures, smaller than the giant species, also found the boreal/post-boreal habitat to their liking, including porcupine, jumping mouse, and others (see FAUNMAP publications of the Illinois State Museum).

The mastodon must have hung on for some time here, its enormous form moving along marshes still edged with spruce, until dwindling conifer stands sent him northward following more abundant spruce.

The boreal/post-boreal ecosystems succeeding tundra and spruce here developed as habitats favored by other benign giants (whose fossil remains have been found at the Polecat Creek site near our study area): the great stag moose with its deer-like antlers; the giant beaver, inhabitant of the plentiful marshlands of post-glacial times; and the giant ground sloth with its preference for open glades. Small herds of flat-headed peccary almost surely scurried through the late-boreal landscape, followed by hungry, dire wolves in pursuit of their favorite prey. The terror of them all, a giant whose fossil remains have been found in bordering areas, though not actually in central Illinois, was the carnivorous short-faced bear. Long-legged and swift, it was a predator whose cat-like appearance we would wonder at. Its ominous ghost may linger yet in the woods along our streams or in

our county forest preserves, although the actual vegetational setting of its day was somewhat different from ours.

While this was the twilight of the giant animals, whose extinction approached, it was the dawn of a radically different species in the study area: Man, who may have played some part in their disappearance. As spruce forest gave way to ash forest, then as elm-oak forest phased in some 10,000 years ago at the onset of the warmer-climate "Holocene," red or gray squirrels abounded by day, opossum and raccoon by night. White-tailed deer, gray wolf, and red fox each had found its niche. Man, the newcomer species, the one with predatory techniques never known here before, walked easily into their world.

FIRST NORTH AMERICAN: Projectile-Weapon Hunter, Manager of Fire, Modifier of Ecosystems

Fully Modern Man is thought to have begun radiating forth from a point of origin in northern Africa about 40,000 years ago. Those groups that spread east-northeast across northern Asia were halted in the late Pleistocene at the Lena River Valley in Russia by factors of Climate.

From about 30,000–14,000 BP, an intensely cold, dry climate "selected" a near-treeless, steppe-tundra vegetation for all of *Beringia* (defined as the combined lands of easternmost Siberia, western Alaska, and the emerged mutual continental shelf between them). During much of that period, moist winds off the Pacific were depositing substantial frozen precipitation across what is now Canada, building glacial ice, but most of Beringia remained a dry, open steppe, since predominant winds enroute there out of the west crossed only dry land for the last third of the globe's circumference at that latitude. The rich steppe-tundra is thought to have supported herds of large, tundra-grazing animals, with populations possibly as numerous as those of the Serengeti Plains of Africa today. But the Paleo people who would have been natural hunters of these animals would have been unable to use this prey resource, because the lack of wood-supplying trees discouraged their occupation of the area.

We believe that northern people of the Ice Ages were highly efficient at surviving intensely cold, dark winters, but fuel (wood) for cooking fires and for warming the interiors of their simple shelters was a prime necessity for their survival. Vast, treeless, frigid Beringia must have been a no-mans-land until sometime after 14,000 BP, when the warming climate of the new interglacial led to gradual reforestation of river valleys throughout Beringia. With warmer weather and available firewood, pre-Clovis inland hunters, and probably other groups, spread rapidly into Siberian Beringia, across the flat plain still remaining above sea level, and into Alaskan Beringia, prospering on the rich availability of game. By about 11,300 BP, the notable Clovis culture, unique for its invention and manufacture of large, fluted spear points that seem to have been especially effective in dispatching large prey, had separated itself out and had begun radiating southward into the passageway, ice-free for some centuries, along the eastern flank of the Rocky Mountains of Canada (a *snow* shadow of the Rockies?; compare to "*rain* shadow of the Rockies," mentioned earlier in this segment).

These hunters and their family groups had no travel plans in mind—they could not know the true nature of world geography—but in pressing ever forward into new territory as they followed game, they became the first members of the human race ever to step into mid-North America. (Whether an earlier, maritime people may have island-hopped and coast-hugged, refugium to refugium, to an earlier entry at west-coast North America is a question not too relevant to our story.)

It is now believed that, for the nearly 2,000 years between the Clovis entry and reflooding of the Bering Straits about 9,500 BP, the climate was human-friendly, and the way would have been open for a succession of human beings to have walked on dry land from the southern tip of Africa, north through northern Asia, across Beringia, and south through the Americas to the tip of South America!

BERINGIA, named after the Bering Straits between Siberia and Alaska, is a region loosely defined as a combination of easternmost Siberia, Alaska, and the wide, flat continental shelf between and around them. The shelf (gray area) is submerged by shallow seas during warm interglacial periods, as now; it stands above the dropped sea level when a substantial amount of Earth's water, falling as frozen precipitation during cold glacial ages, has been locked up in ice buildups at northern latitudes. Beringia is shown here at its estimated maximum land emergence, maximum drawdown of ocean waters, during full Wisconsinan glaciation about 20,000 years ago. The north-south overland distance, between Pacific Ocean waters and the Arctic Ocean at that time (note dashed line)*, may have approximated the distance between New Orleans and Chicago today.*

Paleobiologists speculate that, as the climate of Beringia began to warm around 12,000 years ago, the ocean level had not yet risen to flood over the exposed continental shelf. For a time, a vast, rich, arctic tundra plain is thought to have supported large populations of herding arctic herbivores (mammoth, muskox, et al.).

The term "Land Bridge" fails to indicate the fact that the "bridge" actually surrounded the lands that it connected. (Adapted from map in F. H. West, The Archaeology of Beringia *(1981), and also from Hopkins (1972) and Haag (1962).)*

With each major glacial age, with each re-creation of an undivided Beringia, some animal species would have crossed in either direction to the adjoining continent. Bison evolved in the Old World, along with humans, but preceded mankind into North America during an earlier version of Beringia, surviving in the Old World as the wood bison of Europe. By contrast, the horse evolved in North America and crossed over early into Asia, eventually becoming extinct in the Western Hemisphere—until reintroduced to its evolutionary homeland, and to appreciative natives,by early Spanish explorers.

When the "*first*" First North American finally completed his continent-to-continent migration and stood at the northwest threshold of mid-latitude North America, this continent that he would gradually occupy was, in a sense, virginal. It had known neither primate nor human in all of its millions of years of history. (South America remained in contact with Africa as the continents drifted apart. Which continent was the origin of the order of *primates* is in debate, but *hominids* developed in Africa long after South America drifted off on its own, carrying with it several small monkey species that never made it cross-latitude to mid-North America.)

The human hunter, on arrival, introduced three new and unique factors into North American ecology. First, he himself was a new kind of animal, the *least climate-dependent* of any of the species that we have discussed. Originating in warm climates, he had survived long trial-by-ice living near glacier edges. He was ingeniously adaptable to virtually any climate and was capable of occupying any part of the new continent. He was omnivorous, capable of surviving, in a pinch, on a diet of insects and what we would call garden weeds in warm climates, or upon prime cut of woolly mammoth in cold climates!

Second, he carried with him deliberate command of a powerful force of Nature that in his absence had always been accidental—*Fire*! Particularly in grasslands (like those of the study area), the addition of "anthropogenic fire" may have maintained a landscape that, debatably, might have been different on European arrival, if frequency of fire had been limited over the centuries to accidental lightning fires. (See the following segment on prairie.)

Third, he was a *new kind of predator*. Improving upon an earlier Old World hunter, the Neandertal (who is believed to have been a *contact* predator, attacking prey at close range with stone knives, axes, and pointed sticks), First North American was, instead, skilled at delivering lethal, flesh-piercing strikes with projectiles thrown from a safe distance. Additionally, First North American had the intelligence and the organizational skills to maneuver herding species of herbivores into mass-kill situations (driving bison herds over cliffs, for example). Thus, the newcomer had the power to measurably alter (unintentionally) both plant and animal ecologies, though not yet to the degree that newcomers of European origin eventually altered them.

Within a suspiciously short time after human hunters arrived on this continent, a number of large-animal species, but only a handful of small-animal species, became extinct. Of the many theories proposed to explain this surprising phenomenon, few credit human activities entirely, although most implicate them indirectly. In any case, this interglacial would have been the first one in North America in which a predator with such hunting skills—killing by projectile—was present. Human hunters may have tipped the precarious balance toward extinction, either directly by taking as prey some juveniles of giant herbivore species with the characteristic of delayed sexual maturity, or indirectly, by competing with now-extinct carnivores for their usual easy prey, the young, the old, and the sick of favored species.

NOTE: "First North American" is used here as a generic term to denote all peoples descended from overland emigrants from Asia to the Americas, through Beringia, during the late Pleistocene.

About 11,200 years ago, according to some estimates, the first two-legged creatures ever to *walk* into east-central Illinois gradually appeared out of the West. Splashing their way through clear morainal streams at rocky-riffle crossings, they infiltrated spruce woodland and grassy glade. Skirting marshes, these first people trod paths trampled down by the great mastodon, whose mountainous, meaty form they eyed from a distance, calculatingly, through the rising swamp mists. We imagine them at day's end camping in child-noisy, extended family groups beside seeping spring, brook, or willow-fringed pond, feasting at evening fires upon the plentiful kill of the day, perhaps topping off the meal with starchy, roasted roots from the swamp.

Little is known about these people, except that they were culturally close to their origins, still training succeeding generations in the exacting manufacture of the skillfully fashioned, fluted spear points of Clovis tradition. Although most of the fluted spear point finds in the study area have been discovered at scattered upland sites, the nomadic hunters would have followed their prey wherever it led them. In the more than 10,000 years since their passage, erosion and countless alluvial rearrangements (water-moved soil) have obliterated evidence of the Paleo hunters' presence in most low-lying lands.

According to one hypothesis, these earliest of First North Americans advanced steadily out of the northwest, generation after generation, spreading south and east across the continent in a narrow wave of temporarily elevated population, exploiting a wealth of easy prey all along the way—animals as yet unwary of upright-walking creatures who launched the sting of death on flinty-sharp, flying lances, killing from a range of up to 30 to 50 feet away.

By the time this new kind of predator arrived here, the area must have been nearly free of the tundra-grazing woolly mammoth, whose preferred boreal habitat had migrated northward with the glacier edge. It is known that for a brief period of time First Hunter and the last of the mammoth crossed paths in the Great Plains of mid-America. Fossil bones of a mammoth species less dependent on boreal climates than the woolly mam-

20,000-year Time Chart, correlating Flora, Fauna, and Man to the succession of post-Wisconsinan glacial Climates in East-Central Illinois

LATE PLEISTOCENE — HOLOCENE

CLIMATE

THE HYPSITHERMAL — hot, dry periods lethal to upland trees

- present — 1600–1900 AD Little Ice Age
- 850–1350 AD Hot dry period Last wave of Hypsithermal?
- 1000
- Approach present climate
- 2000
- Climate reversal; start to cool
- 3000
- Start Neoglacial
- 4000
- HOT and DRY in study area
- 5000
- Mainland ICE in N. America gone; sea at today's level in 6500 BP
- 6000
- 7000
- Postglacial atmospheric circulation established
- 8000
- Beringia divided as sea level rises to flood straits. 9500 BP
- 9000
- Max sun heat this astrocycle; climbing CO_2 levels off, 280/mill.
- 10,000
- Rapidly rising sea level during two Creekan warming trend
- 11,000
- ICE-free corridor open between Cordilleran and Laurentide ice sheets, sometime after 14,000 BP
- 12,000
- Sea level rises to 350 ft. below normal. Flat, emerged continental shelf still 200 ft. above sea level.
- 13,000
- Chatsworth Bog ICE gone; permafrost, glacial-kettle ice, buried "stagnant ice" banks, all melted in study area.
- 14,000
- Study area surface ICE gone
- CO_2 = 210 ppm
- Stand of Gifford glacier
- Begin warming
- 15,000
- Maximum glacial ICE. Minimum sea level; 400 ft. below normal. Long-lasting "Land Bridge" is a flat plain up to 1000 miles wide between Pacific and Arctic Oceans. Up to 300 ft. emergence.
- 16,000
- 17,000
- 18,000
- 19,000
- Max advance of Woodfordian ICE.
- 20,000

FLORA

PRAIRIE with Scattered Oak Woodland

- EURO-AMERICAN AGRICULTURE
- Tall-grass, wet prairie with oak woodland along streams persists past Hypsithermal, as timber is held in check by FIRE, natural and manmade.
- Grassland complexes originally endemic to SE and/or SW occupy extensive areas vacated by tree die-off during Hypsithermal.

Oak Woodland with Reduced Prairie

Oak Woodland with Prairie Openings

Mesic Elm–Oak Forest

Mesic Ash Forest; Spruce Declining

TUNDRA phasing to SPRUCE WOODLAND

(Ice Cover)

Chatsworth Bog pollen core reading. Refer to Illinois State Museum.

FAUNA

- 1791 AD Bison dieoff in study area during LIttle Ice Age
- BISON enter study area for the first time during hot, dry period
- "Total vertebrate faunal complex in Illinois stable" by 4500 BP (Parmalee)
- Some Great Plains animal species invade study area; Pronghorn antelope as far east as Missouri
- White-tailed deer, raccoon, squirrel, etc., to big-river valleys to survive hot, dry conditions

E X T I N C T I O N S

11 12 13 14 15 16

estimated duration in study area

WOOLLY MAMMOTH · HARLAN'S MUSKOX · STAG MOOSE · MASTODON · GROUND SLOTH · GIANT BEAVER · SHORT-FACED BEAR

MAN

WOODLAND MISS.

- First North American, descendants of First Beringians, flourishes after the Hypsithermal, permeating the continent

Americas: pyramids · CORN · pottery · bow and arrow

plant domestication only no domesticable animals available

ARCHAIC

- Adapting to hot, dry climate phase (Hypsithermal), Archaic Indians gravitate toward large river valleys and lowland glacial ponds. Exploit aquatic resources.

Old World: pyramids · EGYPT · full agriculture · bow and arrow

plant & animal domestication

PALEO

- NEW WORLD MAN ISOLATED FROM OLD WORLD (exception: over-water, over-ice migrations)
- Modern Man in study area continuously, beginning soon after 11,300 BP
- CLOVIS MAN enters mid-latitude North America, after migrating southward through corridor about 11,300 BP, bringing first mastery of fire and projectile weaponry to New World.
- By 12,000 BP,climate moderates in Beringia; river valleys are forested. Modern Man occupies all of Beringia, connector of continents.
- Ice-free corridor opens to mid-latitude North America sometime after 14,000 B.P., but Man is not present to use it.

30,000–14,000 BP: An intensely cold, dry climate in Beringia selects near-treeless, steppe-tundra vegetation. Large tundra grazers thrive, but Modern Man is contained west of mountains by lack of trees for fuel. All major continents are connected through Beringian Land Bridge, which is at maximum emergence, but glacial ice blocks access to mid-latitude North America.

2000 AD · 1000 AD · AD / BC · 1000 · 2000 · 3000 · 4000 · 5000 · BP · 9000 · 10,000 · 11,000 · 12,000 · 13,000 · 14,000 · 15,000 · 16,000 · 17,000 · 18,000 · 19,000 · 20,000

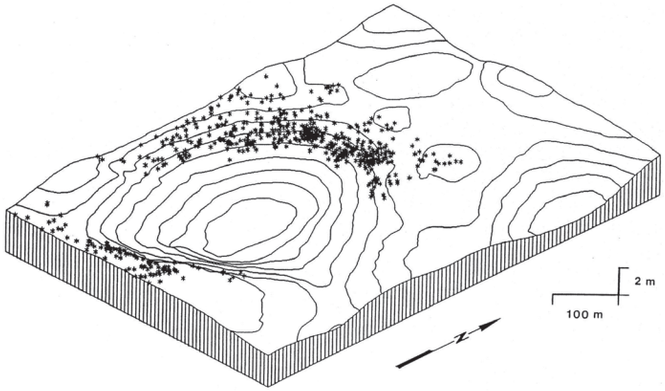
moth of Illinois have been found in association with Clovis points.

The great mastodon (whose favored spruce forage was still available here until about 10,500 years ago), the giant stag moose, the giant beaver, and the ground sloth are all believed to have comprised part of the rich faunal resource available here to these fortunate first spear hunters. *PALEO* Indian is the name chosen for these "ancient ones" who first opened our pristine land to human occupation.

EARLY ARCHAIC Indians, probably in sparse numbers, occupied the area somewhat later in time (see Time Chart, page 17), and may have been descendants of the earlier people, or were later arrivals out of the West. (The passage from Siberian Beringia to mid-latitude North America was unobstructed and amenable weather-wise for some twenty centuries, 11,500–9,500 BP). Their lifestyle was notably different. The climate was relatively moist, the uplands wooded in elm and oak, and the giant prey was extinct. Life was challenging for these more stable residents of east-central Illinois. Techniques of spear point manufacturing had evolved and diversified. The ancient art form of the large fluted spear point was forgotten, along with the giant Pleistocene animals they may have helped to decimate.

For the Early Archaic Indian, water and wetland became a focus for survival. In upland environments, these people discovered a bountiful resource centering on end moraine "watering holes." As the glacial ice had melted back and the loess ground soil had developed, the new land lay dimpled and pocked with "closed depressions" (no drainage outlet) of varying sizes and depths. Shallower depressions on upland plateaus became seasonal marshes. The deeper, more permanent ponds and small lakes were "glacial kettles," originating, like Chatsworth Bog, in late-melting, near-buried blocks of glacial ice.

In the still-moist climate of Early Archaic times, a high water table kept these ponds nearly filled, serving as a focus for an abundance of life, from snail and crayfish to flocking waterfowl and white-tailed deer. We know



Plot of surface artifacts found at Tonica Kettle (a closed depression) during pre-construction excavations along the route of I-39. (Courtesy of Robert E. Warren, Illinois State Museum, Springfield.)

that Early Archaic Indians, camping beneath the willows, depended upon these productive water-centered features for survival. Their specialized ("diagnostic") artifacts are found littering the one-time pond rims, along with clues of their camps. Now mostly filled in by wind and water erosion, drained and plowed over, the original locations of some of these glacial ponds may still be detected as shallow depressions on U.S. Geological Survey contour quad maps, or as patches of wetland-origin soils outlined on county soil maps. (Artifact hunters may increase their chances of success by searching maps for these features, noting that Early Archaic spear points are not technically "arrowheads," since the bow and arrow had not yet been invented in the New World in Early Archaic times).

The post-glacial climate continued its steady temperature rise upward from full-glacial *maximum cold* 20,000 years ago to climax at interglacial *maximum warmth* about 5,000 years ago. First North American entered our area a little more than halfway up the warming curve (see Appendix, page 28).

By about 8,300 BP, the ever-present influence of the dry Rocky Mountain rain shadow had intensified, expanding severe heat and drought eastward in a wedge across east-central Illinois. In the first wave of hot, dry climate, some upland trees succumbed. The major wave of Hypsithermal heat and drought swept over our area about 5,000 BP, destroying the post-boreal woodlands, reducing the range of woody plants to the river valleys. Deep-rooted tall grasses and flowering plants, native to the Southeast but long present in our woodland glades and meadows, expanded the extent of their cover, while steppe flora and fauna spread eastward out of the Great Plains, creating a mingled prairie ecosystem, neither Great Plains grassland nor the tall-grass prairie of later times. The hot, dry Hypsithermal climate episode dominated all life in Woodfordian morainal areas for more than 3,000 years.

MIDDLE ARCHAIC Indian culture correlates in time with this Hypsithermal period, which occurred around mid-Holocene. (The last 10,000 years are called the Holocene). Indians on Woodfordian lands adjusted their lifestyle and natural resource use to the severe climate change. As groundwater levels dropped, draining the higher end moraine glacial ponds around which so much life had flourished and on which the human population had in part depended for survival, the people followed the water table down to the still-active, tree-fringed glacial ponds of the ground moraine flats (Warren 1995) and to the river valleys, where surviving shade trees offered relief from the blazing heat of those Hypsithermal summers out on the open grassland!

People of this culture became skilled at exploiting river resources for food, amply supplementing the red meat of their predominantly venison diet with the white meat of clams and fish. Population of the study area at this time may have been somewhat reduced. In the study area's largely headwater region, only the Sangamon River in Macon County and the Vermilion River nearing the Wabash might have maintained "big river" status then.

By about 4,000 BP, the Hypsithermal climate phase was waning. A cooler, moister climate returned to Woodfordian lands. Although pre-Hypsithermal moistures were not fully regained, groundwater levels rose to again activate many of the upland ponds. The *LATE ARCHAIC* Indian generalized his resource use between end moraine

ponds, till plain ponds, and riverside timber, all now surrounded by the grasslands of the post-Hypsithermal Tall-Grass, Wet Prairie (next segment).

In this segment of study, with its emphasis on ecological climatology, we have identified three types of professionals who can reconstruct, in theory, the succession of post-glacial Climates in the study area, using the data of their discipline: Palynologists, Paleobiologists and Archaeologists. All three confirm the hot, dry Hypsithermal as a local climate event:

1) Palynologists, reading pollen cores from the Chatsworth Bog, find that dry oak woodland apparently started losing some ground to prairie patches by about 8,000 BP. After a limited recovery, the pollen record shows that grasses had achieved a marked domination over trees in the area by about 5,000 BP.

2) Paleobiologists, identifying fossil bones, as placed in a dated context, find that steppe animals, like the plains pocket gopher, infiltrated the Bloomington Ridged Plain during the mid-Holocene.

3) Archaeologists, skilled at differentiating between Early, Middle, and Late Archaic artifact styles, locate Middle Archaic specimens predominantly at the lower water table sites, confirming a dryer climate in the time period known to be occupied by that culture.

As the climate began to cool into the *neoglacial*, First North American flourished, producing the familiar *WOODLAND* Indian cultures. According to Canadian Paleoecologist E. C. Pielou, the coming of the neoglacial probably benefited the human population of the continent: populations increased in size, technology advanced, and hunters and gatherers added gardening to their methods of obtaining food.

While First North American had been expending his energies in far-flung discovery and exploration, back in northern Africa and the near-East territorially settled people had begun to exercise what one speculates to be a genetically programmed talent in the human race for inventing ways of applying laws of physics and biology to the available materials of Nature in order to ease the struggles of survival. Between 10,000 to 7,000 years ago, plants and animals were domesticated in the Old World; the bow-and-arrow was invented; Egypt established itself as a nation; cities coalesced; writing and mathematics were invented. About 5,000 years ago the Great Pyramid was built.

In North America, the time for expanded invention was delayed until the climate had stabilized at the onset of the neoglacial, until people had permeated the continent, diminishing unexplored frontiers. Indians of the Woodland era, in a flurry of technological discoveries, invented for themselves the highly efficient bow and arrow, they developed sophisticated pottery, and improved the weaving of cloth. They domesticated—and improved by genetic selection—a variety of food plants, notably corn, which had become a fully dependable crop in Illinois about 2,000 years ago.

They could not, however, become animal husbandrymen as Old World people had. North America, since post-glacial extinctions, had not been provided by Nature with species of animals that could be readily domesticated to the heavy duties of labor and transport, or as a dietary meat source. There were no wild horses or oxen in the Americas; camel species were limited to South America (where they indeed were domesticated). Wood bison and deer had not been found suitable for domestication in Europe, either. First North American could neither enjoy easy transport nor the luxury of barns and pastures full of ever-renewable meat, milk, fiber, and leather sources as Old World people did.

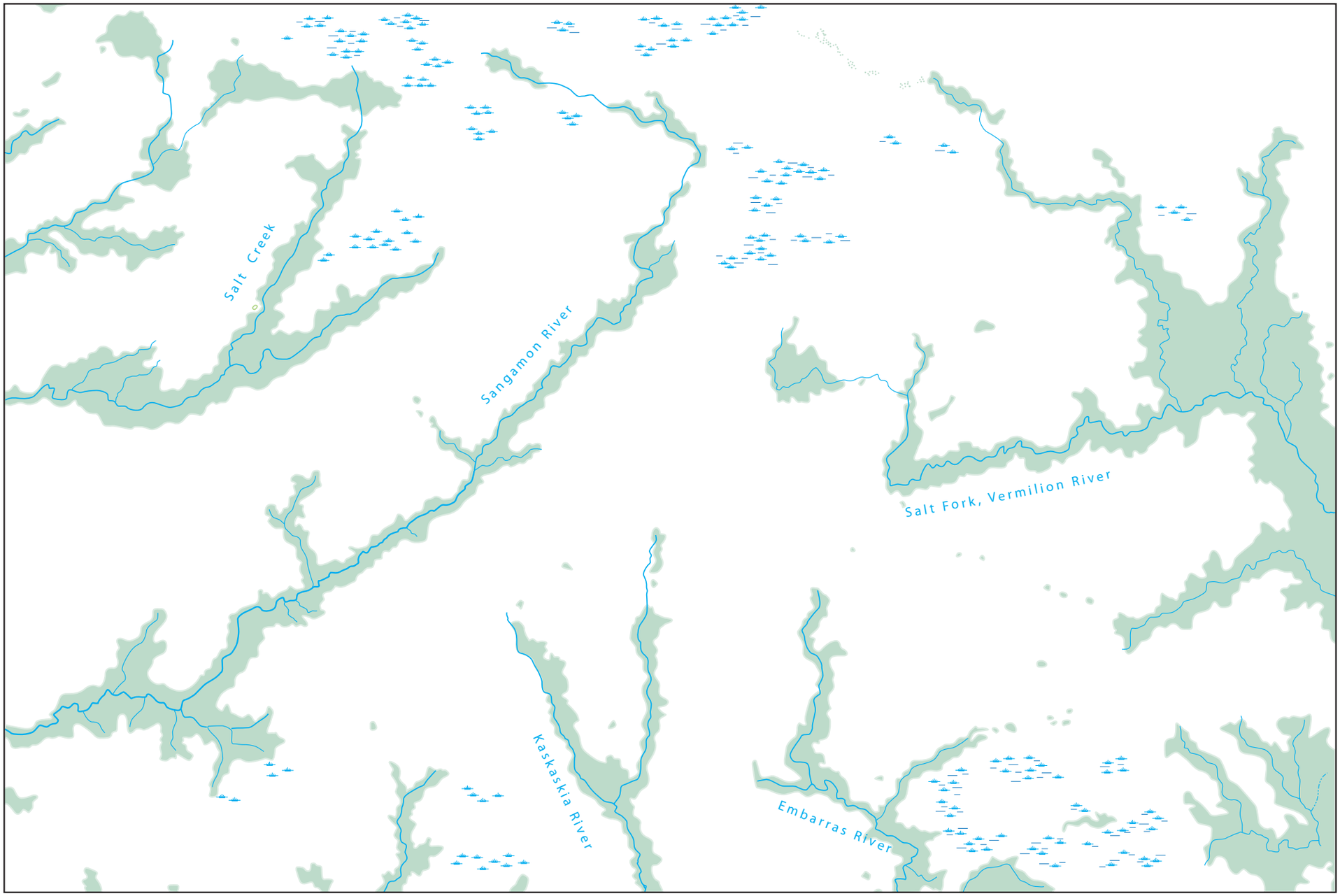
A few centuries before the arrival of Europeans, the *MISSISSIPPIAN* culture in Illinois produced its own cities, ceremonial pyramids, and priesthoods. Without domesticated animals, however, city tenure was limited; the people were confined to hunter-tiller status; population growth remained at a moderate, ecologically sound level; and the concept of private land ownership was irrelevant to hunters whose meat market roamed freely about the landscape. These unalterable factors were at the core of the coming compatibility conflict between Old World and New World cultures in North America and the ensuing tragedy for descendants of the adventurous, ancient Beringians.

Map 3. Tall-Grass, Wet Prairie, ~11,000 years ago

Timber, especially near Watercourses; Balance: Grassland

(caption on facing page)

Source: Map by author, using information derived from records of First Government Surveys, justified against University of Illinois Agriculture Experiment Station Soil Reports.



ponds on section lines, as noted by surveyors

timber

prairie

THE TALL-GRASS, WET PRAIRIE: *Fire-Sustained Relict of a Climate Extreme?*

> *GRASS is the only soil builder of any consequence among the natural vegetation that originally covered this continent.*
> THE AMERICAN GRASS BOOK

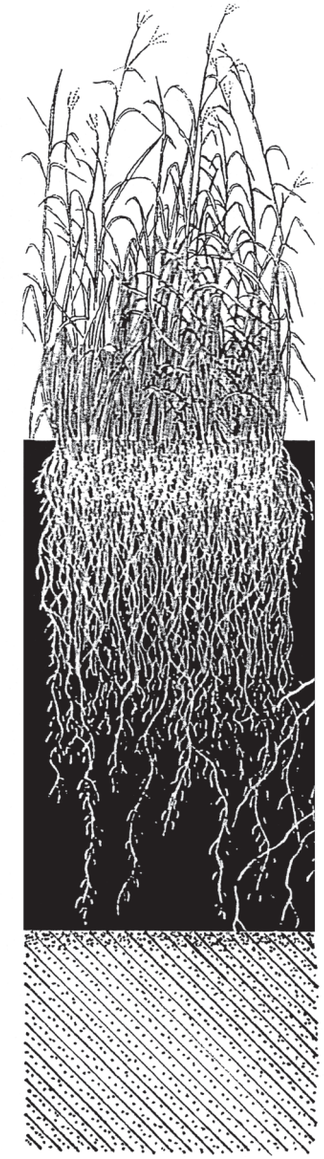
The word *PRAIRIE* brings to the restorationist's mind visions of vast inland seas of distinctive blue-gray-green tall grasses, intermingled with a curious variety of colorful flowers; sunlit, surface-patterned by the running wind, breathtakingly open to a wide sky—a wishful vision never fully realized in small efforts to revive bits of a lost landscape demolished by the plow. To many other Americans, *prairie* has become an old-fashioned word, a sentimental name for almost any open grassland or range east of the Rocky Mountains. In the original French, the word means "meadow." Some Plant Ecologists, however, choose to use the word prairie ("true" prairie) as a scientific term for one particular category of grassland: the tall-grass, lush, high-biomass grasslands that are found in several global locations "on the moist side of large grassland complexes." (*Biomass: measurable quantities of plant material; in the case of tall prairie grasses and their deep root systems, about equal amounts above and below ground-surface level.*)

Both continents of the western hemisphere are home to a major grassland complex. The central basin grasslands of North America and the Argentinean pampas of South America resemble each other in that each lies downwind (eastward) of a major north–south mountain barrier—the Rocky Mountains of North America and the Andes Mountains of South America.

In the familiar weather pattern discussed earlier, air masses moving eastward off the Pacific Ocean leave much of their moisture as mountain rains and snow. A zone all along the plains just east of the mountains thus receives minimal rainfall and supports low-biomass, shallow-rooted, short grasses that develop a light-brown soil with scant humus content.

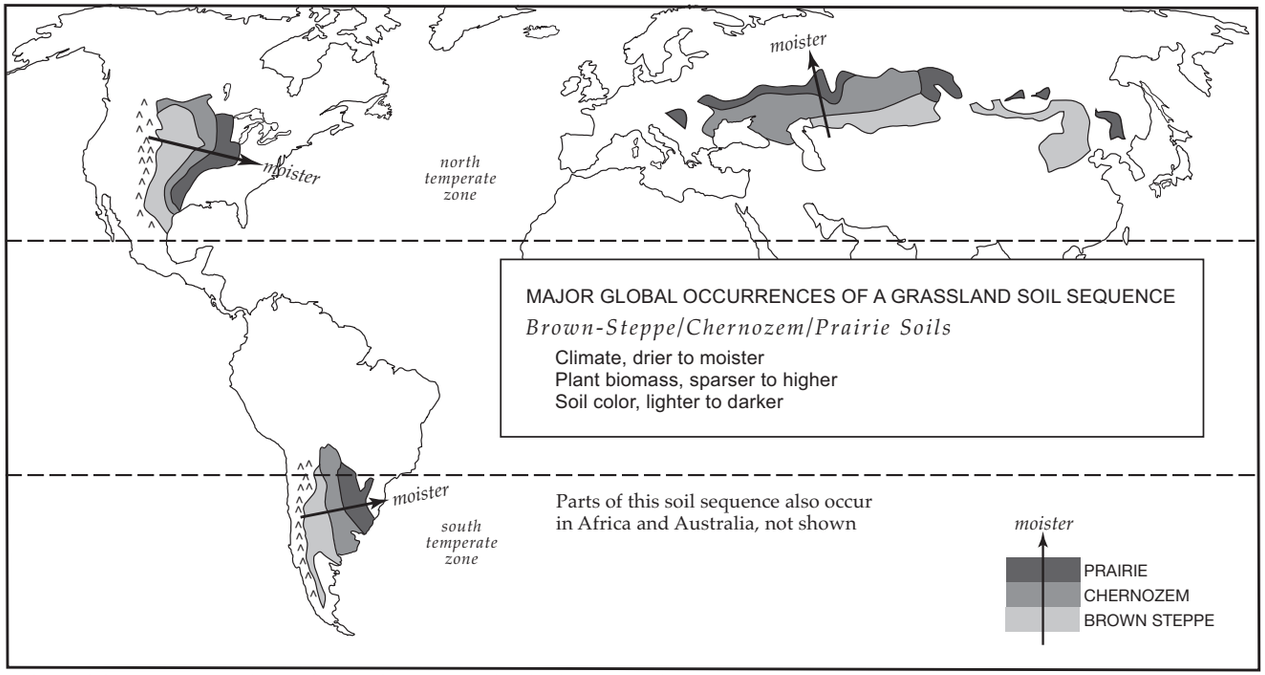
Moving eastward, the air mass absorbs, and later precipitates, ever-increasing moisture in interaction with adjoining air masses. Rainfall thus increases zonally eastward, supporting grasslands that therefore increase in biomass zonally eastward. With the increasing humus content, soil color darkens eastward.

Russian Pedologists were among the earliest soil scientists to classify grassland soils in the light-to-dark sequence, correlating with moisture increase, because the Ukraine (along with adjacent areas) is another of the



In the study area, glacial loess deposits on bedrock vary from 50 to 400 feet deep. At settlement time, only the top six feet or so (the "top soil") of these relatively recent, fine-grained deposits were found to be "black" (humus-rich from decayed prairie-grass root systems) in areas covered during the previous century or more by tall-grass prairie. Beneath this organically black zone, soil color grades into lighter-colored clays (the "sub-soil"). Adapted from graphic by Carol Lerner, p. 17, Chicago Wilderness: An Atlas of Biodiversity.

(facing page) MAP 3. TALL-GRASS, WET PRAIRIE. When First North American walked out of the West into the study area some 11,000 years ago, he came to an elm–oak woodland, rooted into a loess timber soil. More than a hundred centuries later, Euro-American settlers emerged from the forests of Indiana onto an open, sky-wide, inland sea of grass, blossom, and grove—the tall-grass prairie that had replaced the earlier woodlands. The soil, enriched up to six feet deep with decayed root-mass of prairie plants, had made the Illinois prairie region one of the major black-soil regions of the world, while the overwhelming visual aspect of the prairie was becoming renowned. Ecological processes transforming the elm–oak woodland into the tall-grass, wet prairie are conjectured to have been two-phase: 1) Grasses native to the dry Southwest and the Southeast invaded and clothed the area as the Hypsithermal climate phase destroyed upland trees by 5,000 years ago; 2) as the climate returned to nearly its previous state, frequent fires of human origin, both planned and accidental, may have tipped the balance by denying fire-sensitive woody plants a return to their normal dominance. Thus, the species makeup of the post-Hypsithermal grassland may have been selected for adaptability both to "unnaturally" frequent fire and to wide variability in moisture. The east-central Illinois prairie, arguably, may have been an "anthropogenic" landscape, without precedence in earlier ages when fire-mastering humans were never present.



Adapted from Patton, Alexander, and Kramer, Physical Geography, *1970.*

major world locations of the sequence. The Russian terminology, brown steppe soil and chernozem (Russian for black earth), was once used worldwide to name two of the gradations in grassland soil color. Although these terms are all but forgotten in the complex soil classification systems of today, their simplicity is helpful to our basic understanding.

The loess-soil-based grassland that mantled much of east-central Illinois at settlement occupied part of the most easterly extension of mid-continent grasslands, the apex of "the Prairie Peninsula" (as named by E. N. Transeau, 1935). It was the grassland farthest removed from the dry zone of the Rocky Mountain rain shadow, its grasses the tallest, its soils the blackest, its humus enrichment the deepest. Large areas of its surface were shallowly submerged during wet springs; its treacherous, reed-camouflaged sloughs sometimes persisting into the dry falls. Thus, the name for the historic grassland of our study area is "The Tall-Grass, Wet Prairie of East-Central Illinois."

Climates here on Earth, along with the ecosystems that they engender, are in continual transition, driven by the combined interactions of numerous, unrelated variables. While some of these temperature-affecting variables are *mathematical*—as in regularly cycling orbits and rotations—others are *random*—as in continental drift, shifting ocean currents (and, some suggest, human-induced global warming). The tall-grass prairie that early French explorers found in Illinois, and the richly organic soil in which it was rooted, was not a long-time permanent feature here. Soil Scientists have concluded that the blackest soil, the true "prairie soil" at the eastern extreme (this study area) of the large grassland complex of mid-North America is a *young* soil, developed during the past 5,000 years, while grassland soils leading up to it from the west are old soils of longer-established grasslands. They point out that the young soil beneath our feet in east-central Illinois is non-zonal—it has no "calcium horizon," as do the old, dryer grassland soils to the west, where a thin calcium layer is found, formed ever closer to the surface as annual rainfall decreases in the approach to the mountain chain.

Physical Geographers have a comment to make on tall-grass prairie and its deep, black soil:

> *Prairie vegetation can be interpreted as a relict (a holdover) from a drier period; the grass is thought to have persisted despite more humid conditions because of frequent fires which prevent the growth of trees. Prairie soils can thus be viewed as young soils formed under vegetation that bears no relation to the present climate.* (Patton, Alexander, and Kramer, 1970)

The "drier period" at the eve of our own prairie's creation was, of course, the historic hot, dry Hypsithermal climate phase, peaking about 5,000 years ago at the top of the interglacial thermal curve. This phase of extreme Climate brought dramatic ecological changes, not only to this area but also as far east as Pennsylvania. Post-boreal woodlands withered nearly back to streamside, as grassland assemblages native to drier regions of the Southwest spread out-of-bounds to clothe the newly treeless uplands. Grasses and forbs native to the Southeast, but long present in forest glades, expanded their cover as they continued to fringe surviving timber in the lowlands. In the climate analysis, strong winds of a Hypsithermal-enhanced, hot, dry Pacific air mass advancing off the Rockies and funneling through our area, drove a critical moisture line between grassland and forest climates in a deep bulge eastward. As grasses replaced timber within the bulge, old timber soils, characteristically low in stored humus, thus light in color, began to convert into new, humus-stored (high-biomass), tall-grass-supporting dark soils.

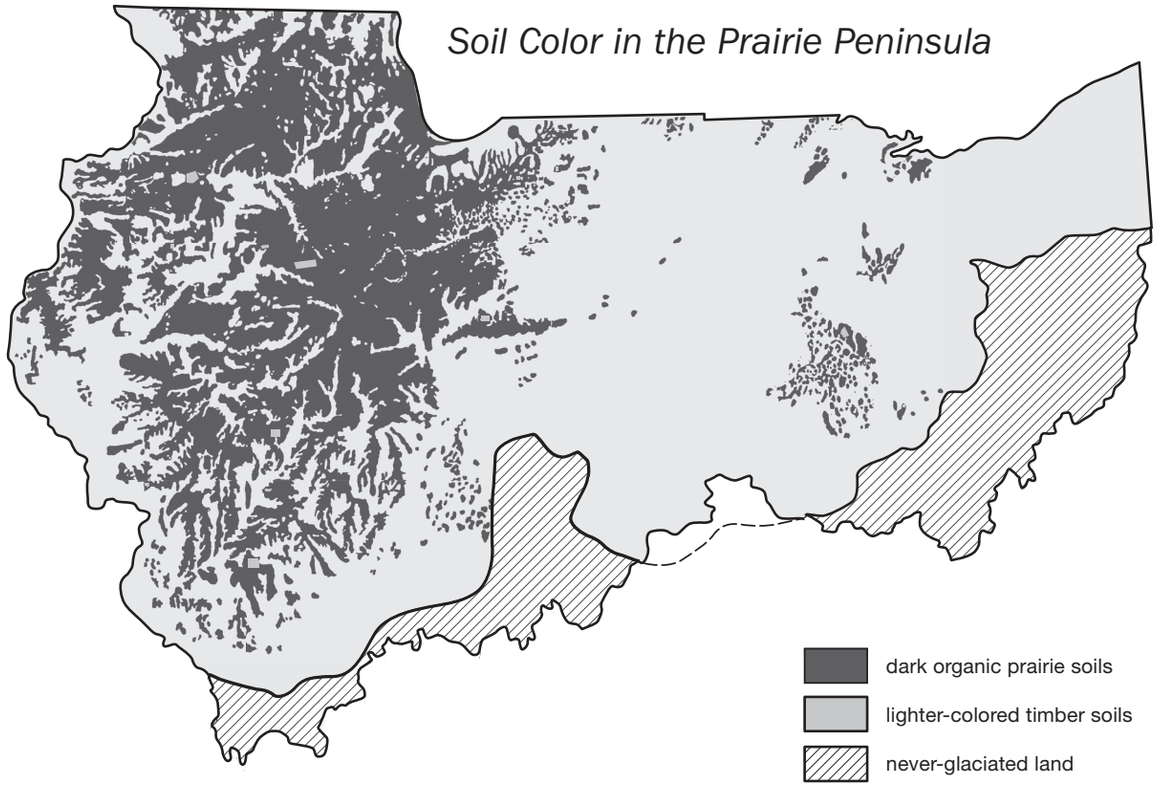
By about 3,000 BP, the Hypsithermal began to wane as the early influence of the approaching "neoglacial" was felt. The climate cooled and moistened again, to one that was more conducive to forest domination. But the Woodfordian morainal landscape here did not return to the pre-Hypsithermal forest-and-glade landscape of late-post-glacial times. Grasses continued to dominate, grow-

ing thick, tall, and lush in the moister (forest) climate. It was a mix, dominated by ancient endemic glade grasses out of the Southeast (big blue-stem, Indian grass) and, in higher, drier spots, by the persisting shorter grasses out of the steppe-like regions of the Southwest (little bluestem, sideoats grama). It was a youthful grassland, creating new black prairie soil out of a previous timber soil, an ecosystem unlike any previous system, a new kind of mixed grass biome never before present here, or anywhere (Axelrod, Wells). Isthmuses and islands of oak-hickory woodland relieved its vastness at intervals. It was a plant "mosaic," a dichotomy of grassland and grove, dominated by grasses.

Early students of the Prairie Peninsula puzzled over this continuing dominance of grass over trees in the revived forest climate of the previous thirty centuries here. At some distance west, the tall-grass prairie blends with shorter grasses as "mixed prairie," then ends in the drier, short-grass, steppe plains of Kansas, western Iowa, and Nebraska. Grasslands that continued to bulge eastward into mid-Illinois as the climate cooled were bounded, north and south, by wooded lands, although as botanist Daniel J. Axelrod put it, normally "grasslands are unstable when in contact with woody vegetation."

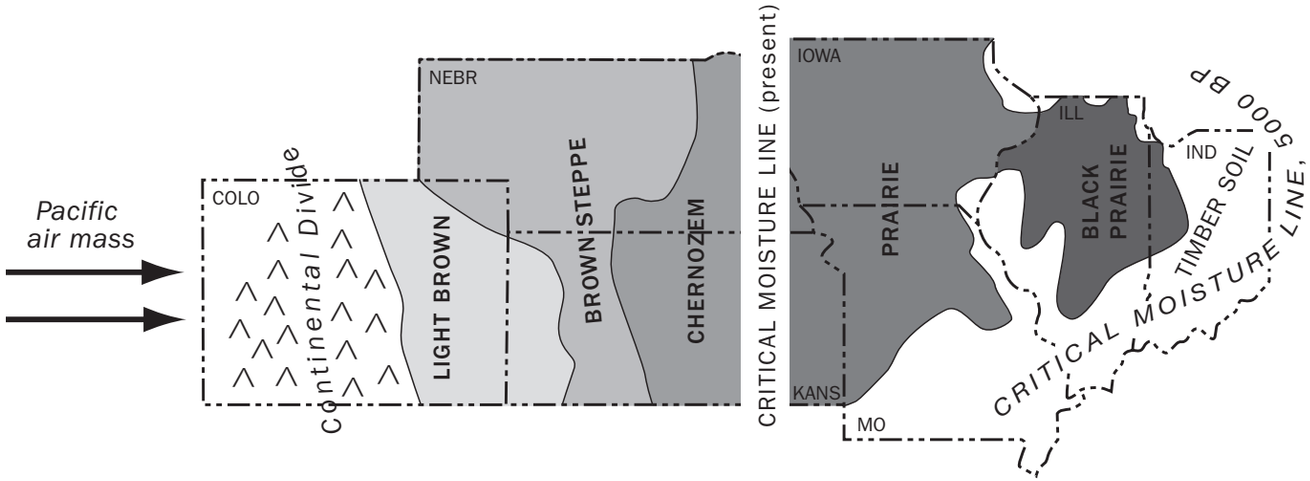
The conclusion of most investigators is that *FIRE*, occurring frequently and regularly across these wilderness grasslands as the Hypsithermal waned (and throughout the many succeeding centuries until settlement) simply gave tree sprouts little chance of surviving to become mature, seed-producing trees.

But, given the usually unpredictable variabilities of Nature, one wonders why fire would occur so *consistently* here, suppressing dominant trees for so many centuries? On the Nature side of the argument: The typical annual weather cycle of east-central Illinois—wet spring seasons producing high biomass, followed by dry fall seasons ripening the abundant grasses into a highly flammable fire base—is a factor encouraging fire once it has been ignited, say by natural lightning. Moreover, the fact that the easternmost lobe of the Prairie Peninsula coincides roughly with the relatively smooth Woodfordian (as yet little eroded) morainal plain suggests that, when fire did occur, the smooth landform offered little hindrance to leaping, wind-driven flames, progressing rapidly across wide expanses of tall, dry-grass duff. Indeed, it is hard not to notice that most of the tall-grass prairie in Illinois coincides with the smooth, new landforms laid in recent glacial times. Both of the above factors would have enhanced fire, however it was ignited.



Like a print from a giant negative, dark, organic "prairie soils" were developed under open grassland; lighter "timber soils" in the shade of forest cover. This map of soil-color reveals that the landscape at time of survey was divided between domination by herbaceous and woody plants—a dichotomy of prairie and forest, of dark and light soil. (From E. N. Transeau)

Cultural Anthropologists have the final word in explaining the creation of the east-central Illinois tall-grass, wet prairie of settlement times: World over, since the dawn of the species, mankind has been firing grasslands to improve availability of wild game, a major food source before domestication of animals. It is commonly assumed by many students of the prairie that, in fact, fire-mastering humans, present here centuries before (and throughout) the Hypsithermal phase, provided a culturally motivated *consistency* in initiating (tree-suppressing) fire that unpredictable Nature may have lacked, thus in effect maintaining an essentially anthropogenic grassland. (*Were early Illinoisans, then, inadvertently responsible for the existence of the lush, black-soil-based grassland to which Euro-American farmers came to plant their [Indian] corn? Is ours, in effect, almost an anthropogenic soil, never found in earlier glacial cycles when humans were not present? To confirm such a hypothesis, we'd need to study early human history in other tall-grass, black-soil regions in the world—the Argentinian pampas and the Russian Ukraine.*)



Soils developed under mid-continent grasslands, grading from dry to moist, light to dark, eastward in the Rocky Mountain rain shadow. (Adapted from S. R. Eyre, Vegetation and Soils, A World Picture*, 1968.)*

Some early eyewitness accounts of the use of fire by Native Americans:

> *"Every autumn the Indians within the entire circuit of their possessions hold a grand hunt. They then set fire to the dry grass of the prairie, and the flame with incredible rapidity spreads over all the country. Before it all wild game flees, having been frightened from their safe retreats, and fall victim to the fatal shot of the red hunters. This destructive custom of burning off the prairies is the reason that timber is confined to the area of streams and a few other places. The heat of the fire not only prevents entirely further extension of the forests but even diminishes their area. Upon these annual hunts the Indians forcibly eject all white settlers from their territory."* (Ferdinand Ernst)

Although Pleistocene extinctions and migrations eliminated significant domesticable animal species from the North American continent, Native Americans learned to use fire as a rudimentary, but effective, form of *wild-animal husbandry*. In moist, forested areas (as in neighboring Missouri), where mature deciduous trees are not damaged by fire, natives fired the forest floor to stimulate the fresh undergrowth that attracted and sustained *browsing* deer. In grasslands like ours, they systematically burned off the ripe duff to produce crops of fresh grass for their *grazing* prey.

On burning of the underbrush to improve forage for deer in mature deciduous forests:

> *"Whites helped transform the habitat and diminish game even in unsettled areas. By 1805, white settlers were putting great pressure on Indians to stop the annual burning of the forests that provided browse for deer. Algonquian hunters complained that 'if we are not permitted to set fire we cannot live . . . if we set fire to the weeds or grass, it is to live on the game, we have no other means to subsist. All that the maker of Life placed on the Earth is to live upon and we endeavor to live as in the times of our first fathers. Why do you reproach us of setting fires?'"* (Richard White)

On burning grassland to freshen it as pasturage:

> *"Wednesday March 6, 1805.—The day was cloudy and smoky in consequence of the burning of the plains by the Minnetarees; they have set all the neighboring country on fire in order to obtain an early crop of grass which may answer for the consumption of their horses, and also as an inducement for the buffalo and other game to visit it."* (Lewis and Clark)

There was an interval between native stewardship of the prairie and the first-felt influence of Euro-American occupation. Consistently frequent fires had ceased, well before Western agriculture took over the area. It was noted everywhere that new forest was advancing into the prairie (particularly downwind of established timber, and often preceded by an advancing border of hazel shrub with its underground runners breaking up the solid prairie sod, giving tree seedlings an easier foothold). The first government land surveyors remarked on the widespread growth of new timber along forest edges—the "scattering trees," like savannah but not true savannah, since their openness was only temporary until the area thickened into true forest and the scattering-tree zone moved farther out into the prairie. The long postponement of return of timber to our area after the Hypsithermal seems to have been coming to an end—just as agriculture halted its return for good!

The first wave of humanity to occupy our area traveled eastward out of the Old World and found woodland and glade here. More than a hundred centuries later, the second wave came, westward in stages, also out of the Old World, and found a sky-wide ocean of black-soil-based, blossom-laced, tall grass, edged with intermittent timber—a dazzling floral artifact created inadvertently by Man the Fire Master, in partnership with ever-adaptable Nature.

An overall average annual rainfall of 36 inches, a fine-grained, wind-deposited loess soil base, a dry late summer, and fairly smooth topography (the last two acting as fire encouragers) are typical elements of the prairie here. Among the prime black-soil regions of the world, many Soil Scientists feel that the Illinois tall-grass, wet prairie region is unique, possibly the best on earth for abundant production of nutrition-packed, dry-storable food staples.

A combination of factors in our Woodfordian morainal region contributes to exceptional productivity in the support of human life:

1) The deep, glacial-origin, loess soil deposits consist largely of medium-textured materials, agriculturally workable.

2) The particular, underlying glacial-till structure uniquely contributes to retention of moisture and to lush growth of vegetation (50% of Illinois prairie land is considered "wet, lush," in spite of periodic droughtiness).

3) Three to five thousand years of deep-rooted, grass-and-forb dominance has crammed the soil up to 6 feet deep with rich, stored nutrients built up from decayed root-mass (humus).

4) The climate, though fluctuating, is on average conducive to notably high crop yields.

5) Smooth, level landforms left by departing glaciers make for ease of cultivation and for minimal slope erosion.

The first Euro-American farmers to reach east-central Illinois, however, had little comprehension of these factors. "What kind of land must it be that cannot even grow trees?" many asked. Colorful accounts of their early observations survive.

Eyewitness descriptions of the pre-to-early-settlement, tall-grass, wet prairie of Illinois are impressive. First-time observers were aesthetically charmed or repelled, depending on the season of their arrival and their own preconceptions. They were seldom neutral about the spectacular landscape that they had heard discussed so enthusiastically in the East.

Although most travelers out of the East had passed through prairie glades and outliers on their way (isolated relicts of the eastward advance of grassland during the Hypsithermal), the *sudden* passage, finally, from closed forest to full, open prairie must have been unnerving. A modern naturalist, John Madson (*Where the Sky Began, Land of the Tallgrass Prairie*, 1982) imagines for us that dramatic moment.

> *". . . in many tallgrass prairies, the break between forest and grassland was shockingly abrupt. There was no gradual thinning of trees, no transition in which prairie grasses mingled with open groves. A man could walk through forest among many of the same flowers and trees that he had known in Pennsylvania, and then suddenly enter a border of wild plum, redhaw, and crabapple several yards wide, with an outer edge of hazel, dogwood, and coralberry that was canopied with wild grape. He would break through a narrow belt of sunflowers, and then out into an open world of limitless sky and distance. At his back were the familiar trees and flowers of the Old States; out front were prairie cone-flowers and compass-plants, and a vast sea of grasses in an entirely new plant association. In ten strides he had passed from one world to another across what was probably the sharpest, clearest boundary between any of the major floristic provinces of the New World."*

On June 25, 1825, Chester A. Loomis of Ontario County, New York State, traveling alone on horseback, noted his own first impressions, as he entered our area:

> *"After traveling about four miles through timbered plains, we reached the eastern border of the Grand Prairie . . . [which] appeared to the north and west as boundless as the ocean. . . . Taking a westerly direction [we] were soon many miles from any timbered lands, and upon a tract of country apparently as level as the surface of a lake, without a single shrub or bush to intercept the view, either to the east, north or west, as far as the eye could reach. On the south a distant view is had of the forest, which in that direction, is the boundary of this immense plain. Occasionally a rock of some magnitude [a glacial erratic?] is seen, but no small stone whatever is found. The soil is deep and rich, covered with grass and flowers . . ."*

Quoted in *On the Illinois Frontier, 1840–1848* (edited by W. and G. Hendrick, 1981), Dr. Hiram Rutherford wrote:

> *"The change of scenery from those rocky mountains and rolling valleys of Pennsylvania to first, the deep forest, and then the level wide-spread prairies of Illinois, with their coats of green, their deep rich soil and their multitudinous sweet smelling flowers would give verse to a poet."*

The 1843 edition of J. Olney's *A Practical System of Modern Geography* recounts the popular understanding of the Illinois prairie:

> *"Illinois abounds in prairies, those beautiful plains so common in the western country. In spring and summer they appear like seas of verdure. The grass, three or four feet high, and often overtopped by fragrant blossoms, is waved by the winds like the rolling billows of the ocean. Without a tree in sight, except the thick forest which bounds them as the beach limits the sea, they stretch away beyond the power of vision."*

Peck's Gazetteer, 1837, defines the area:

> *"Grand Prairie. Under this general name is embraced the prairie country lying between the waters which fall into the Mississippi, and those which enter the Wabash rivers. It does not consist of one vast tract, boundless to the vision, and uninhabitable for want of timber; but is made up of continuous tracts, with points of timber projecting inward, and long arms of prairie extending between the creeks and smaller streams."*

The writer of an 1837 letter was carried away by it all. In the original spelling, as quoted in *The Initial Evaluation of the Illinois Prairies, 1815–1840*, by Douglas R. McManis:

> *". . . the pararies in the summer present one vast natural garden of delights spreding before the aye such a butiful and varagated scenery, decked with flowers of every shape, sise, and hugh, that he that could not admire them must be destitute of a sence of beauty and elegance."*

Another 1837 letter, this one from a La Salle County immigrant writing to family back home in Norway, is quoted in *Land of Their Choice*, edited by Theodore Blegen:

"The land in the state of Illinois is largely prairie, with little woodland except along the rivers and creeks. The summers are extremely beautiful. Then the whole country, both woodland and prairie, is bedecked with grass and flowers of all colors, which bloom from earliest spring to late autumn. When some fall, others come up. Some big yellow ones in the autumn have stalks ten feet high."

In 1850, Dr. A. W. Herre (*American Botanist*, Vol. 46, 39–44, 1940) wrote of his earlier observations in Illinois:

"One of the most marvellous sights of my whole life, unsurpassed in my travels in nearly all parts of the world, was that of the Illinois prairie in the spring. Unfading are my memories of that waving rippling sea of wild sweet william. It stretched away in the distance farther than the eye could reach. And as the sea of phlox faded, it was succeeded by another marvellous flower bed of nature's planting, and instead of a single mass of color there was a vast garden of purple cone flowers, black-eyed susans, rosinweeds, blazing stars, asters, golden rods, and others."

Early comers to Illinois often felt obligated to evaluate the agricultural potential of the prairie. Explorer Louis Jolliet, in diaries of his 1673 voyage on the Illinois and Mississippi rivers, wrote with an accuracy borne out over time:

"At first when we were told of those treeless lands, I imagined that it was a country ravaged by fire, where the soil was so poor that it could produce nothing. But we have certainly observed the contrary; and no better soil can be found, either for corn, or for vines, or for any fruit whatever."

Chester A. Loomis wrote in 1825:

"These open plains are too extensive for good settlements; yet that portion of the country which is wooded is valuable for the kind and quality of its timber as well as the surprising fertility of soil. The prairie lands however are generally deemed superior in richness and fertility to any other, and probably are so."

Not all early settlers were so optimistic. Some thought that land that could not grow trees must be worthless. An elaboration on this early attitude may be found in University of Illinois Water Resources Report No. 90, by R. C. Hay and J. B. Stall:

"When . . . early settlers came in, east-central Illinois was a wide, flat, swampy expanse covered with big bluestem, and other swamp grasses. Settlers described vast ponds covered with green scum, swarms of mosquitoes, cholera, milk sickness, ague, and fever. They considered the land worthless. An early resident refused to trade his riding horse and saddle for 640 acres valued in 1974 at about $1 million."

Relating to the east-central Illinois area directly, Chester A. Loomis wrote:

"June 28th. I spent this day in exploring and examining the country near the Vermilion. Prairies of unknown extent spread to the west. . . . The extensive prairies here, covered with blossoms a great part of the year, are peculiarly favorable to bees . . ."

Mrs. Jane Patton, who settled in the northeast corner of Champaign County in January 1855, shortly before the railroads came, wrote of the study area as it was then:

"It was not a barren waste; it was a bleak cold place in the winter time The snow went the way the wind took it as far as it wanted to go, and the tumbleweeds also; but in the summer time it was all grass and flowers, and you could see as far as the strength of your eyes would let you see, and the tall grass, when the wind blew, was like the waves of the sea, beautiful to behold. If you knew where you wanted to go you had nothing to do but to start out and go, but look out for the ponds of water or you would be right in one if you did not, for the grass in the ponds would be higher than your head, and it would be lots more trouble to get out than it was to get into a pond. . . . Now you have the hedge fence and the straight roads and the square corners and the groves, and you can't see a wagon five miles on the prairie, as you could then."

Settlers often made their move in late fall, after the crop at the old home had been garnered and converted to cash. Many arrived to a forbidding landscape of tangled brown grasses to the horizon, or an expanse burnt ashy-black, vast and bare. The desolation was happily relieved in spring by a landscape freshly green with new grasses and colorful with wildflowers.

Bounteous wildlife enlivened the prairie scene. Loomis wrote:

". . . Game is abundant. The forests are filled with deer, and the prairies with turkeys and prairie-hens; prairie wolves and opossums are numerous."

Dr. Herre wrote:

". . . Every spring and fall the prairie was covered with water so that the whole country-side was a great lake. All day long swarms of water birds filled the air, and far into the night their cries sounded overhead. At the first gleam of dawn vast flights of ducks dashed to and fro and great flocks of wild geese sped swiftly across the sky."

Characteristic patterns of growth were noted by early chroniclers:

"The timbered lands here border the streams and watercourses. Every creek is lined with valuable timber from half a mile to two miles in width, and generally extending from its mouth to its source. An astonishing growth of vegetation is also everywhere prevalent, except in the dry prairies, where the wild grass holds the ascendancy. This wild grass in the dry prairie grows thick at the bottom, but not more than two feet high; but in the wet prairies the grass and weeds grow to the height of seven or eight feet, and so thick and close as to impede the progress of a horse, and thus rendering traveling slow and disagreeable." (Loomis)

Loomis indirectly confirms a tendency for a savannah-like community of scattered trees to pioneer into open prairie on the east side of thick timber, protected from fire driven by predominant winds out of the southwest:

"I have observed that on the western edges or borders of all the large prairies a thick growth of young timber is springing up, whereas on their eastern borders no under brush is found within many rods of the open lands. This is undoubtedly caused by fire divisions by those westerly winds which prevail in October and November, when these immense plains are annually burnt over. "

Dr. Hilgard, resident of St. Clair County, 1836–1848, commented on growth patterns within the prairie itself:

"It may be said that most of the species growing on the prairies had a tendency to grow in more or less compact patches, so as to frequently remind one of a varicolored quilt."

Notice was taken of the abundance of grape vines in and at the edge of timber. Loomis describes an almost jungle-like aspect:

"I spent this day . . . without observing anything unusual except the immense growth of grape vines, which among some parts of the timbered lands load every tree and connect whole forests."

The first government surveyors, instructed to make note at the end of each surveyed mile of the vegetation they had just passed through, commonly described timber-area undergrowth as *"U G, hazel and vines"* (U G is shorthand for "undergrowth"). (Today's restorers of savannah prairie remnants may find ancient, arm-thick grape vines networking beneath prairie grass at ground level.)

As noted earlier, a zone of small native fruit trees often bordered an established stand of timber on its south and west edge, dropping off to a lower zone of berry brambles and shrubs, which was then fringed at prairie's edge with a pure strip of sunflowers. Thus in many places, in spring, a white or pink froth of blossoming plum and crabapple brightened the long, dark edge of the tall timber, while in fall, a brilliant yellow ribbon of *Helianthus divaricatus*, the woodland sunflower, accented the timber-into-prairie transition. Along the north and east borders of timberland, more protected from fires driven by winds out of the southwest, thick-cloning shrubs, particularly American hazel, often spread well out into the prairie from the forest edge—like a wide beach between mainland and sea.

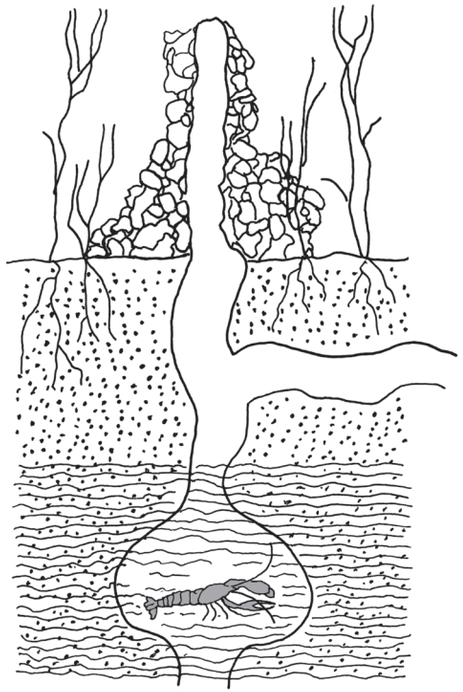
While many early descriptions dwell on the uniform aspect of the "prairie sea," others mention the tufts of small native fruit trees and shrubs ("towheads") marking the meandering courses of the intermittently flowing draws. There were swamps and sloughs, where tall grass and reeds grew double-thick, treacherously hiding the standing water at their feet. A government surveyor poetically remarked upon the many small ponds that appeared for a time after each good rain. Imagine the view from the low ridge of an end moraine after such a spring rain: the newly-green-and-flower-hued plain, glittering briefly with myriad scattered mirrors of reflected sky as the sun came out once more.

Occasionally, standing out like a lone ship on the sea, a sturdy bur oak defied prairie fire, surviving because, once established, its thick, corky bark protected its cambium layer from harm. (In the outer edge of timbered tracts, huge bur oaks seemed to grow at limb's length from each other, perfectly spaced, the shade of their solid canopy and the water-absorbing capacity of their wide-spreading root systems discouraging undergrowth. These were the beautiful, park-like "oak openings," so attractive to many a weary pioneering family looking for home.)

If we were to choose a symbol to represent the Illinois tall-grass, wet prairie of old, it might well be the burrowing crayfish—as English speakers interpreted the French term, *l'crevisse* (the crevice dweller). This creature makes its burrow home *at water-table level*, which in lower spots in the prairie before artificial drainage characteristically receded from above the ground surface in springtime to inches below ground as rainfall diminished during summer and fall. This species of crayfish adaptively controls its own living conditions by progressively deepening its burrow so that it may always dwell in a comfortable, shallow water pool, just a little below the seasonally-dropping water table, a refuge to which it returns after each night's foraging aboveground. The evidence of this creature's excavations shows up as a growing, hollow towerlet of plastered mud, which lengthens its burrow above the ground surface—the "crayfish chimney." The taller the chimney, the deeper the water table has receded. What other creature so well embodies the wet prairie's characteristic seasonal ecology?

A whimsical (possibly true) explanation for the term "Illinois the Sucker State," comes from an alleged practice of thirsty travelers crossing the hot, dry Illinois prairie in late summer. It is claimed that, in parched desperation, a traveler might cut a hollow, wetland reed as a straw and suck up water from the tiny excavated wells of crayfish (water well-roiled by the alarmed small creature at the bottom of the well, one might imagine!).

Burrowing Crayfish
Procambarus gracilis



L'crevisse, napping by day in its watery, self-constructed, underground refuge, waiting to emerge into the cooler, moister airs of night to hunt.

Appendix

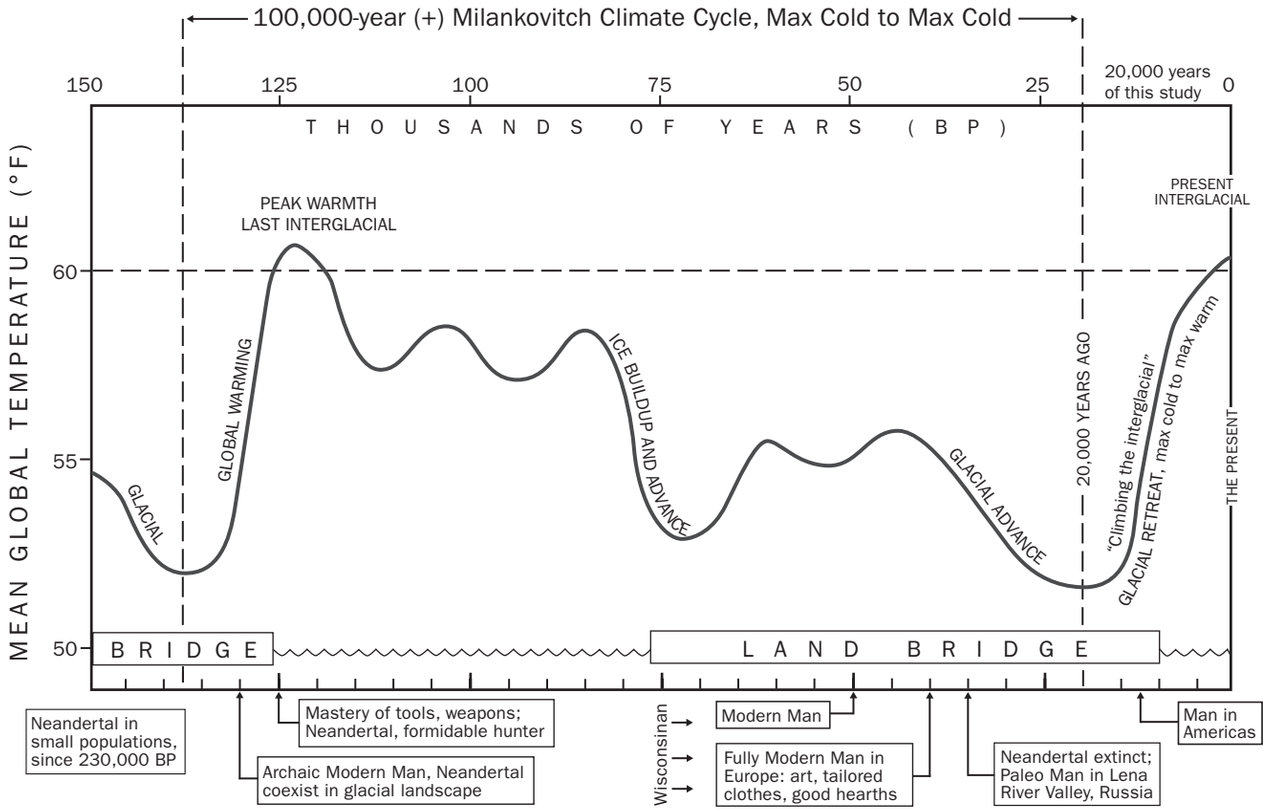
Investigators have concluded that THREE HUNDRED MILLION YEARS AGO most land capable of supporting continental glaciation lay *south* of the equator, rather than north of it, as now, and that cycling periods of continental glaciation were in full swing then, in what we name the "Ice Ages of the *Southern* Hemisphere."

The piece of the Earth's crust that was to become Illinois then lay near the equator. No flowing, debris-laden ice from South Pole regions reached such a warm zone to deposit rocky materials. Another type of indirectly glaciation-related material was being deposited over most of Illinois' future lands at that time, however—materials that would develop into the alternating beds of limestone and coal that underlie most of Illinois.

During each warm period between glaciers, sea levels rose as the ice melted, flooding the future site of Illinois, making it part of a temporary continental shelf under shallow seas. Marine shells settled to the bottom there and consolidated into beds of limestone along with sandstone. When the climate cooled into a full "glacial" period, sea levels dropped, as enormous quantities of the Earth's water were stored in ice buildup on southern lands. The piece of the continental shelf that was to become lllinois then emerged, and, so close to the equator, supported a thick jungle growth that eventually converted into beds of coal, shale, and so on, that now alternate with beds of limestone, sandstone, and so on, to mark each full glacial cycle.

By about TWO HUNDRED AND FIFTY MILLION YEARS AGO, the bulk of continental landmasses had "drifted" into the warm, mid-globe latitudes, and cycling temperature ages were producing only small glaciers in cold mountain altitudes. For the next two hundred million years or so (between the two hemispheric Ice Ages), average global temperatures on land were warm, because more of the Earth's landmasses had drifted into semi-tropical zones. It was the long Age of the Dinosaurs.

Continental land continued to drift northward, driven by forces of plate tectonics, until the Earth became continentally top-heavy (if you picture North as "up"!). By about TEN MILLION YEARS AGO, the cycling Ice Ages of the Northern Hemisphere had slowly begun, and they increased in duration and area affected as more land drifted into the northern zones. (It is interesting to consider whether continental drift might eventually rebound, sending crustal plates southward again!)



This graphic represents an estimate of mean global temperatures from 150,000 years ago to the present, according to the well-known theories of Mathematician-Scientist Milutin Milankovitch. The low-temperature dip shown at about 140,000 BP marks the coldest part of the Illinoian glaciation; the dip shown at about 20,000 BP marks the coldest part of the Wisconsinan glaciation. Temperature difference between the coldest glacial and warmest interglacial is estimated here to be only about 10 degrees Fahrenheit! Yet, with the global positioning of the continents at those times, this drop in mean global temperature was sufficient to lower sea level by about 100 meters, as cloud-transported moisture was tied up in virtually continent-wide ice fields. (Adapted from an illustration in Imbrie and Imbrie, Ice Ages: Solving the Mystery*, 1979.) Important developments in the history of the human race occurred during this most recent, major, global-climate cycle. (See text.)*

The state of Illinois is thus, doubly, "The Glacier State." Remarkably, in our state, the unconsolidated rocky materials deposited during the Ice Ages of the Northern Hemisphere are often found to lie directly upon the series of solid beds of coal and limestone deposited during the Ice Ages of the Southern Hemisphere, two hundred million years earlier, all clues as to what happened here during that long intervening time having been eroded away!

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PERSONAL COMMUNICATION

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Michael D. Wiant, Illinois State Museum Research and Collections Center

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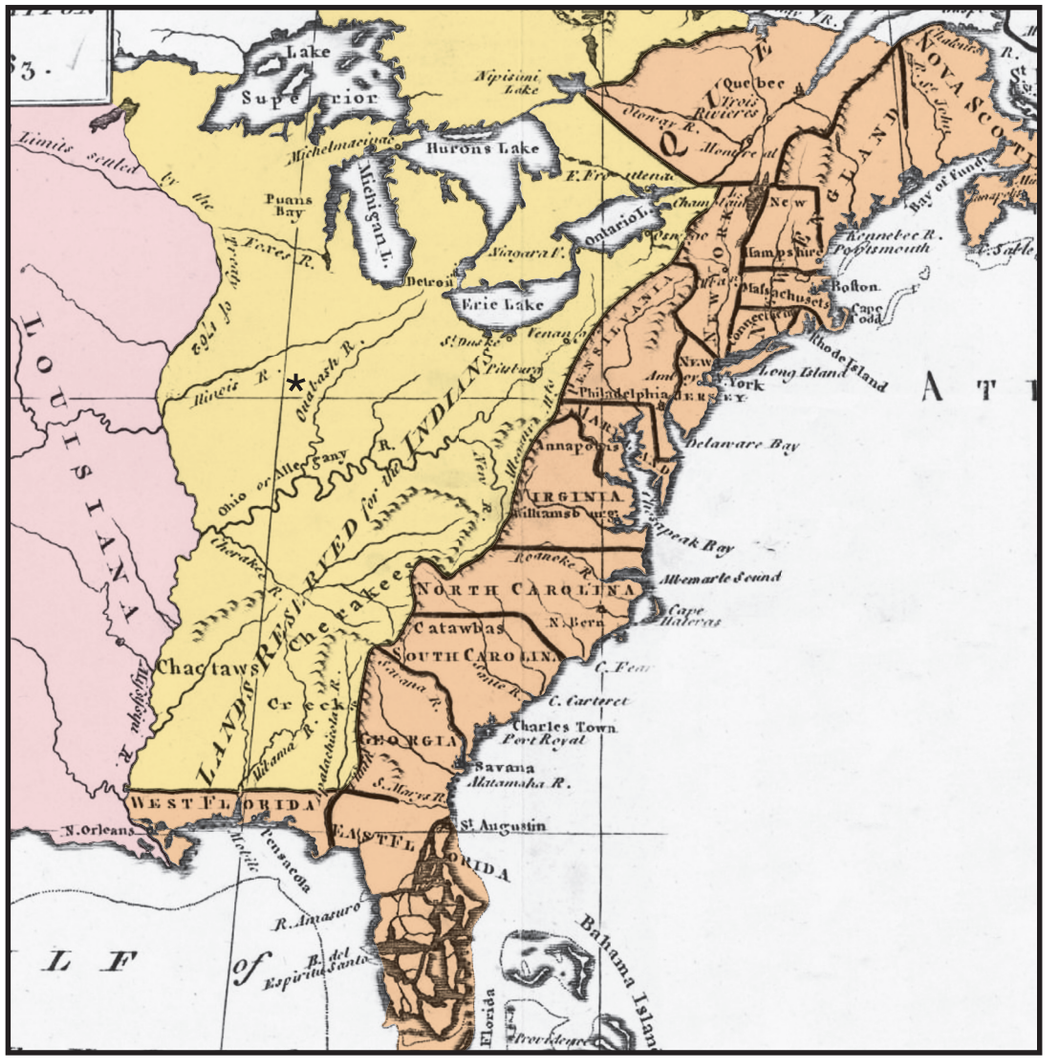
PART II

Hunting Territory to U.S. Public Domain

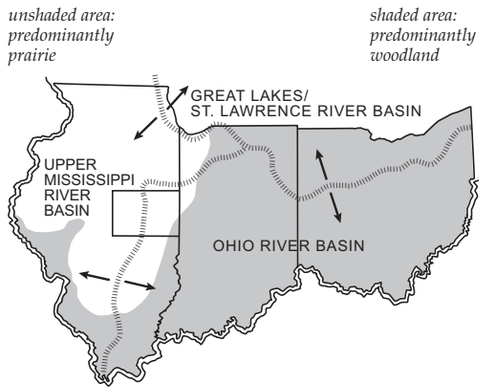
1607–1819



Terms settling the French and Indian War, in which British forces ousted the French from lands west of the Appalachians up to the Mississippi, are delineated in this map. The 1763 Treaty of Paris, followed by the 1763 Proclamation Line agreement, gave Britain dominion over former "New France," but acknowledged Native ownership. The east-central Illinois study area is seen to lie within "Lands Reserved for the Indians" (shaded yellow).

* Approximate location East Central Illinois Study Area

1763



REGIONAL ORIENTATION STUDIES in History/Geography: East-Central Illinois

- ☐ Part 1: Landforms and Ecosystems in the Making
- ☑ Part 2: Hunting Territory to U.S. Public Domain
- ☐ Part 3: Wilderness Becomes Real Estate

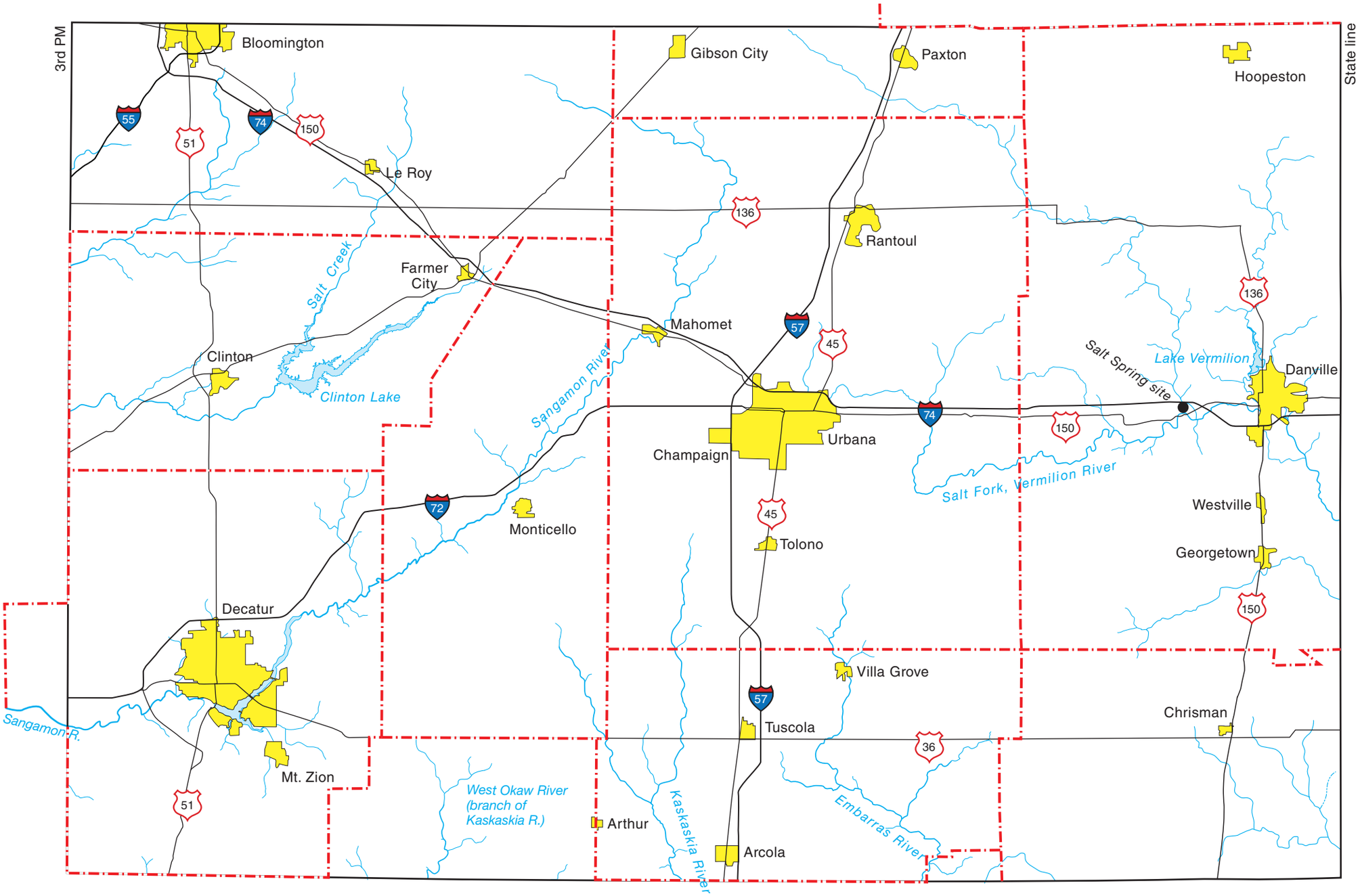
The Diary Keepers: History, On the Record

- The Portage Connection
- The Vermilion Salt Springs
- The First Two Centuries of Euro-American Presence East of the Mississippi, 1607–1803
- The Natural Scene

Indian Land Cessions: Tribal Territories Transformed into U.S. Public Domain

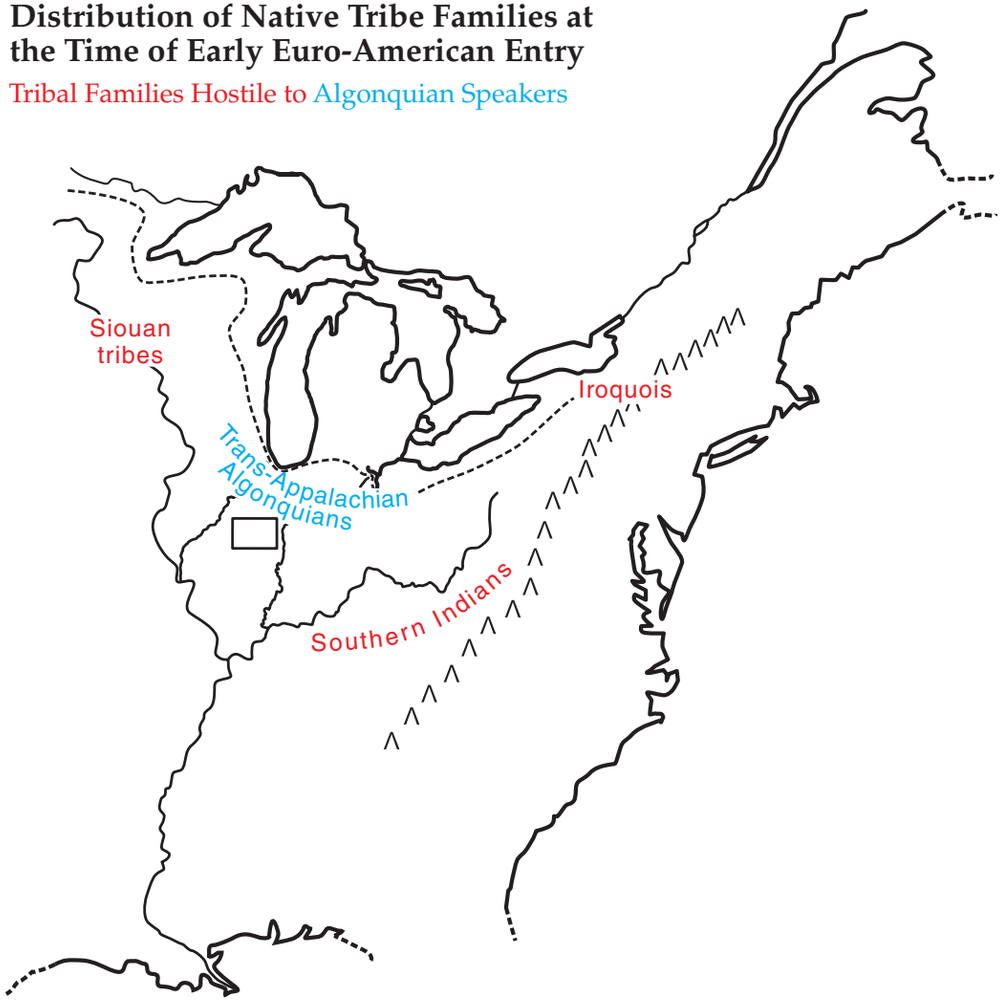
- Concept of Indian Territorial Boundary, 1763–1803
- The Treaty of Greenville, 1795
- The Kaskaskia Purchase, 1803
- Tribes Ceding Lands in the Study Area, 1803–1819
- Reflections

The East-Central Illinois Study Area

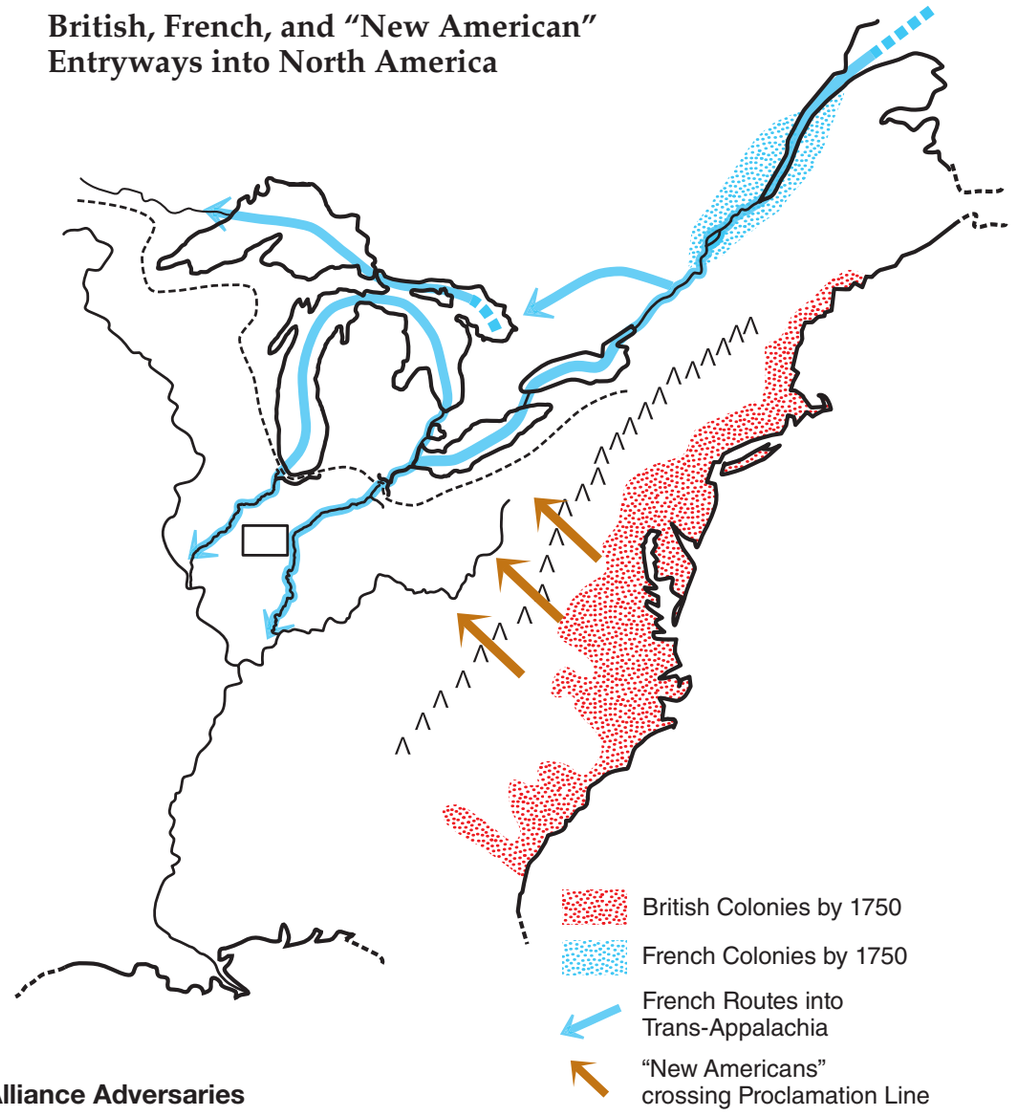


Distribution of Native Tribe Families at the Time of Early Euro-American Entry

Tribal Families Hostile to Algonquian Speakers



British, French, and "New American" Entryways into North America



Fur Trade Partners
British–Iroquois
French–Algonquians

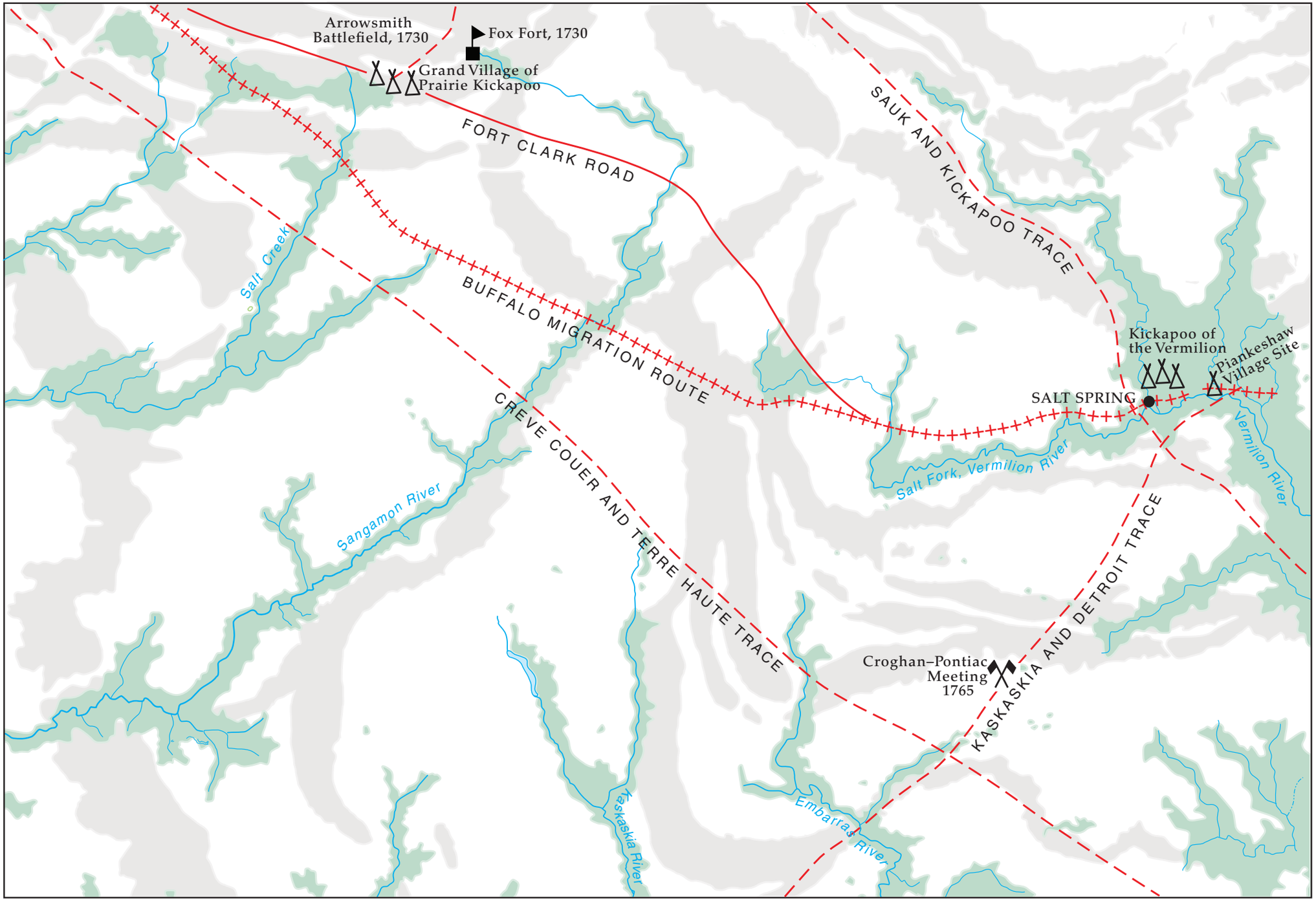
Same Race Adversaries
British vs. French
Iroquois vs. Algonquians

Biracial-Alliance Adversaries
British–Iroquois vs. French–Algonquians

Relation of Cultural and Natural Features of Early Prairie in Study Area

(caption on facing page)

Early Cross-Country Traces and Trails (estimated routes)



THE DIARY KEEPERS: History, On the Record

The voyages of Columbus informed literate, marine-skilled people of Europe of the existence of land westward across the ocean. The written word then came to the Americas and proliferated here in the form of countless diary entries, often penned in wilderness conditions, by a number of early explorers and travelers. French explorers, from 1634–1682, laid claim to our study area as part of "New France." For nearly a century, the French developed their traces, traveling from major river to major river across our territory. French claims were extinguished in the first Treaty of Paris, 1763, ending the French and Indian War; English claims, in the second Treaty of Paris, 1783, ending the American Revolution. In the meantime, Kickapoo and Piankeshaw tribes, regrouping after a century of intertribal warfare—the Iroquois fur wars, 1641–1701, and the Fox territorial wars, 1710–1740—had established villages in our area. When the Piankeshaw abandoned their lands on the "Big" Vermilion River by about 1795, the Kickapoo established their own village near the salt springs, a village not vacated until after the 1819 cession treaty. Early diarists wrote glowingly of plentiful game in our prairie area, but the buffalo and the elk of which they wrote had vanished decades before Euro-American settlement here, making way for the domesticated animals of the pioneer, as grazers of the prairie.

(facing page) RELATION OF CULTURAL AND NATURAL FEATURES OF EARLY PRAIRIE IN STUDY AREA. The 1821 Government Surveys identified forested groves of trees associated with waterways, in green, running though the open prairie. Within these landform features, human habitation and wildlife established routes of travel that have been identified as shown in red on the map.

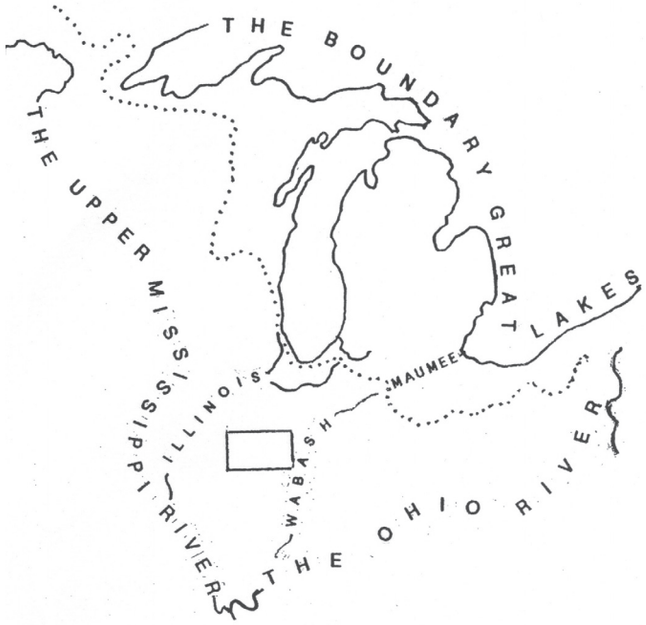
THE PORTAGE CONNECTION

The tall grasses of pre-survey east-central Illinois clothed the rise of land between two rivers—the Wabash and the Illinois—whose unique role in the history of wilderness travel is all but forgotten. Chosen by untold generations of canoe travelers, these two rivers served—probably since the American canoe was invented—as super-highways of the wilderness (inter-watershed super-fluvial-ways?!).

In undeveloped wilderness, many travelers preferred the smooth slide of water beneath a cargo-laden canoe to the rugged struggles of overland travel on ill-defined trails (particularly before the reintroduction of the horse into the Americas!). Moreover, because of the nature of drainage, upstream water trails branch out into every part of the landscape, providing infinite access wherever a boat can float, although navigability varied in times of seasonal flood or drought.

The Wabash and Illinois Rivers were key links connecting all the canoeable waters of the entire Great Lakes/St. Lawrence water-shed, which flow into the North Atlantic, to all the canoeable waters of the entire central basin, draining, via the Mississippi, into the Gulf of Mexico.

The Ohio River–bound *WABASH* River was accessed from Lake Erie (thus from the North Atlantic and Europe) by way of the *Maumee* River, which flows northeast from the watershed crest near Ft. Wayne, Indiana, into Lake Erie at its western end (now the site of Toledo, Ohio). An overland tote of boat and gear of about eight miles (three miles in the "freshes of spring," when the feeder brooks were full and boatable) transferred the traveler from the Atlantic-bound waters of the upper Maumee to the Gulf-bound waters of the upper Wabash, on this, ". . . the greatest of all wilderness travel routes" (Van Every). From the North Atlantic at the Gulf of St. Lawrence to the Gulf of Mexico at the mouth of the Mississippi (and points in between), this route was all canoeable waterway, the only portages being those around Niagara Falls,



around the falls at the mouth of the Maumee, and across the Maumee-Wabash connection. (The 1783 Treaty of Paris, concluding the successful American Revolution, was not securely implemented until holdout British, and their allied native warriors, were routed from the strategic Maumee by General Anthony Wayne at the Battle of Fallen Timbers eleven years later, in 1794.)

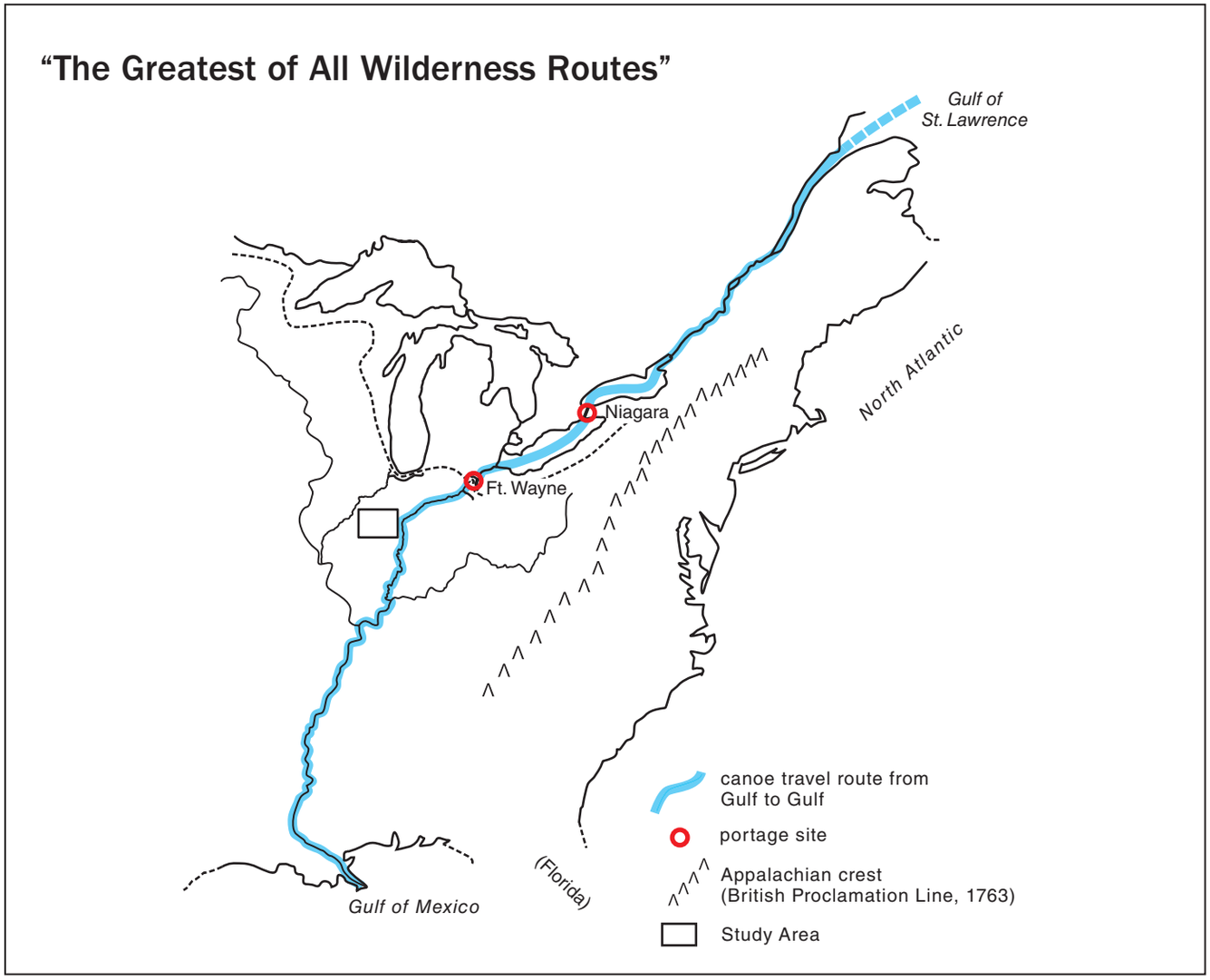
Upper Mississippi–bound, the *ILLINOIS* River was accessed from Lake Michigan (thus also from the North Atlantic and Europe) either by way of the south branch of the Chicago River and a short portage (in nowadays Chicago) into the Des Plaines River branch of the Illinois, or by way of Michigan's St. Joseph River, which makes a sharp bend near the watershed division at (you guessed it!) South *Bend,* Indiana. The short portage thence into the Gulf-bound waters of the Kankakee River branch of the Illinois was near the present Notre Dame campus. *Had those wilderness travelers possessed Future Vision, they would have been dumbfounded at the populous cities that were to grow up, centered around some of these now-forgotten wilderness portages: Chicago, Fort Wayne, South Bend, Akron!* Eastward, several less-used portage

routes connected Lake Erie to the upper Ohio River. To the northwest, another portage route connected upper Lake Michigan to the upper Mississippi River via Green Bay, the Fox River of Wisconsin, and the Wisconsin River.

The bracketing of our prairie area by two major portage rivers connecting the North Atlantic to the Gulf via the Great Lakes did not, however, make our area a hub of early activity! Certainly, some canoe traffic must have left the Wabash to ascend the Vermilion as far as the game-luring salt springs on the Salt Fork of the Vermilion—probably since earliest times—but for the most part, pre-settlement river traffic must have streamed right past, ignoring our bare prairieland. (After pioneer settlement, farm produce from our area, loaded onto makeshift flatboats at Eugene, Indiana, was floated down the Wabash and on down to New Orleans for sale. The Sangamon River, downstream from our area, was used for this purpose by the young Abraham Lincoln, but the upper Sangamon of our area may have been too brushy and snag-prone for extensive commercial use.)

The broad valleys, within which the Illinois and Wabash Rivers chose their channels, had been scoured into the landscape by major meltwater torrents rushing seaward from the melting Michigan and Erie glacial lobes in the late Pleistocene. The force of the debris-laden water smoothed the descent, eliminating major rapids sites and easing the downstream float for Gulf-bound flatboats of a later era. The downstream drop from the watershed at the Maumee-Wabash portage, on down to sea level at the Gulf, is about 765 feet.

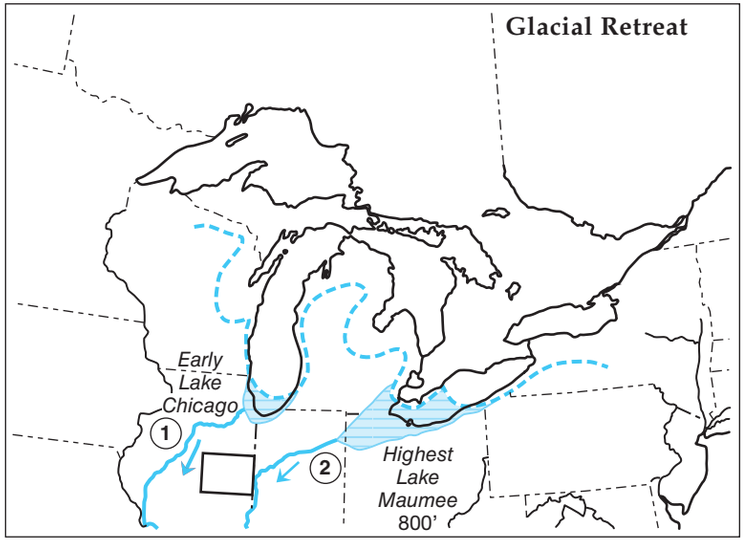
The NORTHWEST TERRITORY, shown here, brackets the strategic line of ancient portage connections between North-Atlantic-bound and Gulf-bound canoe waters. The "carrying paths" between paired headwaters crossed from one drainage basin to the other at intervals along the divide. Note that the Northwest Territory is entirely water-boundaried, except for two short land lines, at its eastern and northwestern limits. (Note that the northernmost part of Minnesota drains into the Hudson Bay drainage basin. The portage into that basin was used extensively by early French traders on their way to Lake of the Woods, and beyond.)



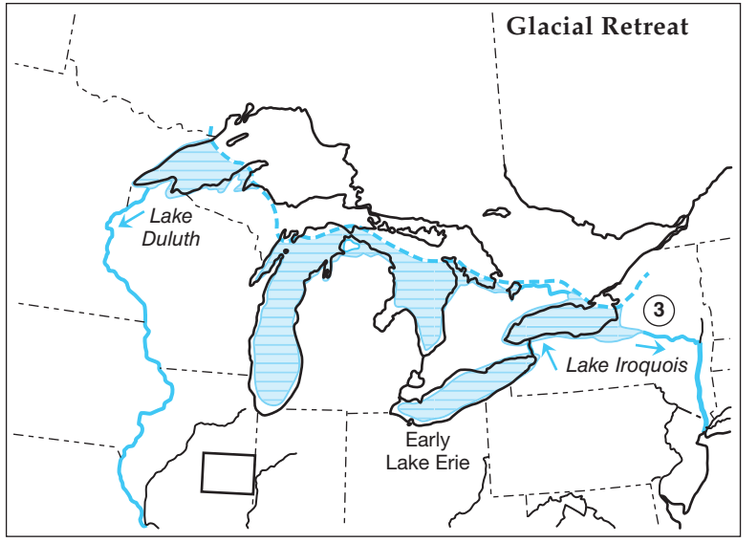
Glacial Meltwater Torrents Scour Valleys That Would Become Future Arteries of Canoe Travel

When the earliest inhabitants of regions around and south of the Great Lakes began to fashion water-craft to serve their travel and transport needs, they discovered that Nature had provided several remarkably long and minimally obstructed water routes that connected lands in the North Atlantic watershed with lands in the Mississippi-Gulf watershed. In each of these major water routes, one wide, continuous valley crossed the watershed divide, so that the headwater of the Atlantic-bound canoeing stream was conveniently within reasonable portaging distance of the headwater of a Gulf-bound stream.

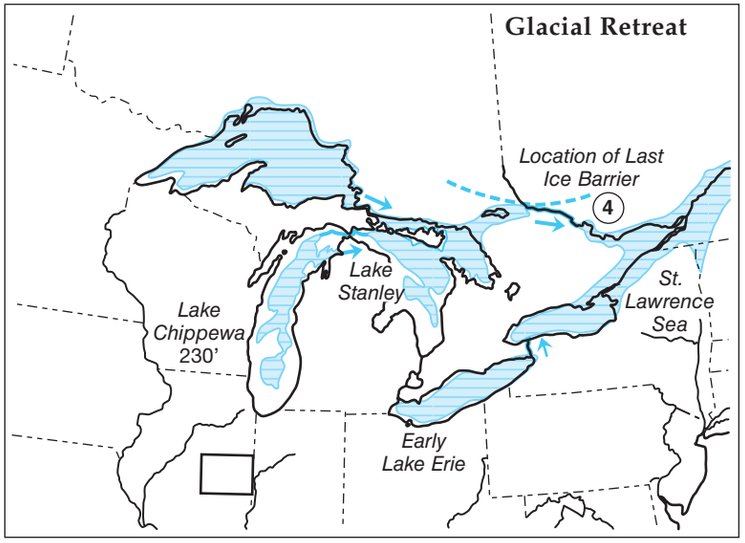
The phenomenon can be traced back, millennia, to a series of glacial meltbacks. In each case, the wide, cross-watershed valley was originally scoured into the landscape by a single, Gulf-bound meltwater torrent, issuing from a glacial system that had over-ridden the divide. When the ice dams had all melted away, canoeable streams ran in both directions from the divide, but coursed within the single, wide valley. The glacial meltwater-valley origin of several historic canoe routes is shown in these maps adapted from Jack Hough's book, *Geology of the Great Lakes.* Dashed blue lines indicate estimated location of a retreating glacial front, in a series of northward-ebbing advances and retreats.



Meltwater-valley ① supported a canoe route from Lake Michigan (St. Lawrence watershed), into the Chicago River, across the portage into the Des Plaines River, thence downstream into the Illinois and Mississippi Rivers. Meltwater-valley ② supported the most famous cross-watershed canoe route: From the west end of Lake Erie, up the Maumee River, portage at Fort Wayne into "Little River" flowing into the Wabash River, thence downstream into the Ohio and Mississippi Rivers.



Meltwater-valley ③ is conjectured to have connected to the Hudson River and the Atlantic. Canoeists would have followed the Mohawk River from the Hudson, into the Oneida Lake connection, portaging into Lake Ontario. After the canoeing era, the Erie Canal was built along this route.



Early French canoeists often used meltwater-valley ④. A shortcut from the St. Lawrence River at Montreal to northerly French posts at Sault Ste Marie and Michilimac, the route also avoided Iroquois attacks by passing north of Iroquois lands in upstate New York. Canoeists traveled west, up the Ottawa River from Montreal, portaged into Lake Nipissing and followed its outlet, French Creek, into Georgian Bay of Lake Huron.

THE VERMILION SALT SPRINGS

Some 600 years ago, investigators believe, a prolonged spell of hot, dry, grassland-generating climate in the mid-Mississippi River valley brought a surge of buffalo eastward from their High Plains habitat and into the conjoining upper Mississippi River and Ohio River watersheds of our study area. Herds that migrated through our area picked out a northwest–southeast route paralleling, and often using, the high ground of the Woodfordian end moraines. As processions of the bulky animals plodded along, choosing the firmest ground, most likely reinforcing fainter tracks long established by lesser animals, their heavy hooves incised into the dry-grass landscape of the time a broad trail that was the forerunner of the "1834 State Road," later improved to become U.S. 150. The Norfolk Southern Railroad and parts of Interstate 74—particularly to the east of Bloomington—now parallel the course of this "old Indian and game trail," as pioneers, arriving soon after the disappearance of the buffalo were wont to call it.

Crossing the prairie, from grove to grove, the chosen migration route skirted the Salt Fork River timber along its northern edge (as U.S. 150 still does in the Oakwood area, where it temporarily rejoins the "Old State Road"), until it reached the vicinity of a saltwater-saturated, riverside meadow (the Vermilion saline), which was a major destination for salt-hungry herbivores, as well as for the meat-hungry humans who tracked them. Here, the shaggy caravan may have streamed down gullies into the Salt Fork floodplain, or picked a path down the gradually descending ridge between the Middle Fork and Salt Fork, as the two streams converged to flow on as "The Big Vermilion." As the ridge flattened into floodplain, an option for continuing eastward was to ford the Middle Fork at an age-old crossing at the submerged delta just upstream of the confluence, ascend back to the upland, and proceed along the north side of the Big Vermilion to its confluence with the North Fork (site of present day Danville). The "briny seep springs" in the bottomland just *west* of the confluence were described by pioneer H. W. Beckwith in an address delivered before the Old Settlers' Meeting in Danville, Illinois, on September 5, 1878: "Two or three acres of the ground were bare of grass, undergrowth or other vegetation, made so by the wild animals, whose well-beaten tracks, from several directions, converged on the brackish ooze. In several places were pits, where the Indians had sunk curbs, made of bark, into the yielding soil, to collect the brine."

"Salt seeps" are salt springs where the discharge of the salty subterranean water to the surface is diffused over an area, rather than emerging at a single outlet. "Salt licks" visited by animals typically were seep springs. The term "saline" seems to have been used to refer to salt springs where commercial production of salt was feasible.

From Big Bone Lick in Kentucky to Boone's Lick in mid-Missouri, such natural salt springs and seeps were distributed sparsely throughout the Midwest landscape. At these seep sites, a saltwater-puddled meadow or bog typically developed, trampled bare by grazing and browsing herbivores, who instinctively sought minerals lacking in their forage. Prehistoric Illinoisans are thought to have stalked prey animals that paused at these sites to lap up the salty ooze or to lick soil frosted with evaporated salt crystals (consuming, no doubt, some of the soil as well, since some licks are historically described as wide, shallow basins).

Big Bone Lick, within the bend of the Ohio River as it rounds the northernmost lobe of Kentucky, must have been a particularly boggy salt seep as the glaciers melted northward. Bones of giant, late-Pleistocene animals that perished, trapped in the muck as they sought salt there, became a big collectors' item for Americans with a scientific bent, including Thomas Jefferson.

One has to assume that rivers or creeks named Salt Creek, Salt Branch, and so on, were each related to an old salt spring. In fact, the historically known salt seeps in our area each found its point of emergence in a streamside floodplain (for reasons to be discussed later).

Three mineral-water discharges were known in Edgar County, in a line directly south from the Vermilion saline. Another minor discharge, in Prairie Township somewhat east of this line, is described in Edgar County history: "Indians led an old Dutchman to what is called Salt Fork, to a place that seems to have been a kind of deer-lick. It was a basin four or five rods across [about 80 feet in diameter], trampled down [or the soil licked up with the salt?] a foot or two below the surface of the surrounding country."

On May 10, 1821, government surveyor John D. Poteet wrote in his field notes: "The NE quarter of section 23 [T 15 N, R 12 W in Edgar Township] contains a large Sulphur Spring, which is used by Deer Cattle & Horses as a lick It is situated near the SE corner on the west Bank of the [South Fork of Brouillett's] creek in the edge of the prairie." Two mineral springs were known farther south along this line, one at the north side and one at the east side of present-day Paris, the Edgar County seat. Waters from the latter were actually bottled for sale into the 1950's (Jenison).

SALTMAKING (the reduction of salt-spring waters to dry salt) was not likely to have been a concern of the first humans ever to come upon the Vermilion salt springs, perhaps as early as 11,000 years ago. As they followed animal trails leading to the site from several directions, these first, nomadic, spear-hunters must have been delighted to come upon numbers of their favorite herbivore prey, coming and going at the salt resource, a convenient gathering of targets. For, perhaps, the next ten thousand years, human exploitation of the seep would have been primarily as a hunting spot.

Flesh of their prey probably satisfied the salt need of pre-agriculture hunters of our area. But, when North Americans learned to cultivate corn and other wild food plants, the proportion of low-salt food (corn and garden vegetables) in their diet would have risen relative to salt-rich food (meat), creating a need for supplementary salt—in a convenient form. The craft of saltmaking at the

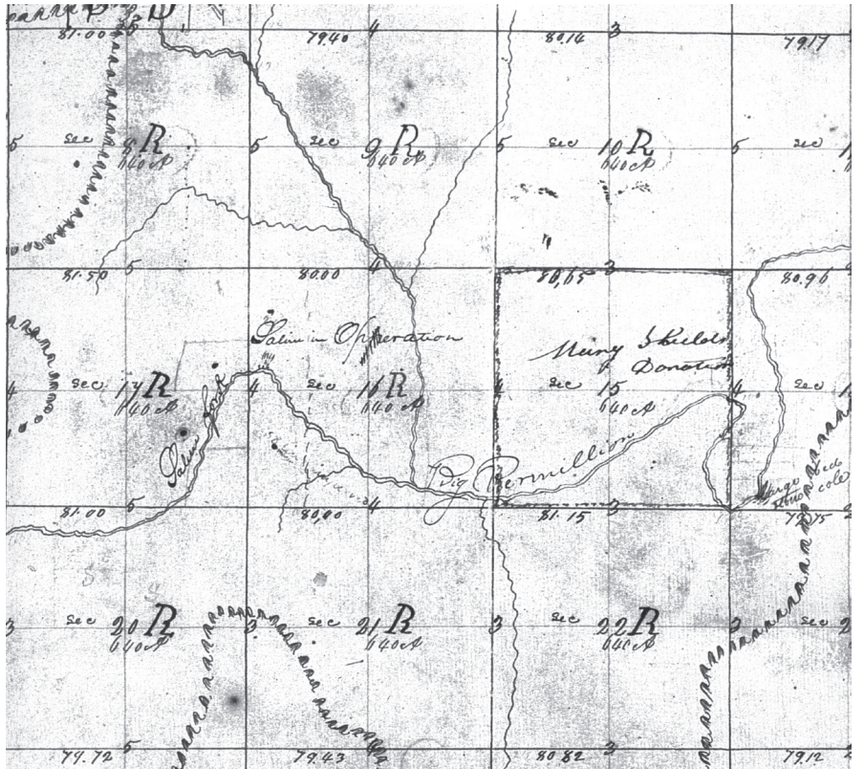
Vermilion springs thus may have first begun sometime after substantive adoption of agriculture in the Midwest, roughly 600 AD, in the Late Woodland culture period. As the proportion of cereals and vegetables in the diet rose relative to meat, the need for salt would have risen, with intensive salt production developing along with intensive cultivation of plants (Muller) after about 1000 AD, in the Mississippian culture period.

The Vermilion site, as a focus for archaeological study, was obliterated by stripmining operations, but findings at salt springs in southern Illinois suggest that one ingenious native saltmaking technique in prehistorical Illinois consisted of digging a pit into firm ground outside the seep area, lining the pit with clay, adding hot coals to bake this clay lining until it was water impermeable, feeding salt-spring waters into the clean clay pot thus built into the ground, and finally, reducing the brine to dry salt by frequent rotation of heated stones introduced into the reduction pot (Muller).

In any case, saltmaking was a long-established native technology when the Piankeshaw Indians of written history first occupied the Big Vermilion valley around 1650. A century later, old men of the tribe were telling early Euro-Americans in the area that: *[We have] no recollection of the time, it was so long ago since [our] people first commenced making salt [at the Vermilion saline]* (Beckwith 1879).

In 1701, the powerful Iroquois Nations' sixty years of aggressive warfare westward, seeking to appropriate other tribes' fur lands, was officially concluded by treaty, and the French founded Detroit near the head of Lake Erie, in the former "war zone." Two years later, Frenchmen established Kaskaskia, near the mouth of the Kaskaskia River into the Mississippi, south of St. Louis. In 1706, French settlers, bound cross-country from Detroit to the new settlement at Kaskaskia, strayed a bit off the Kaskaskia-Detroit Trace to investigate the Vermilion salt springs. Their written account of 1706 was

FIRST PLAT, 1821 Government Surveys



1821

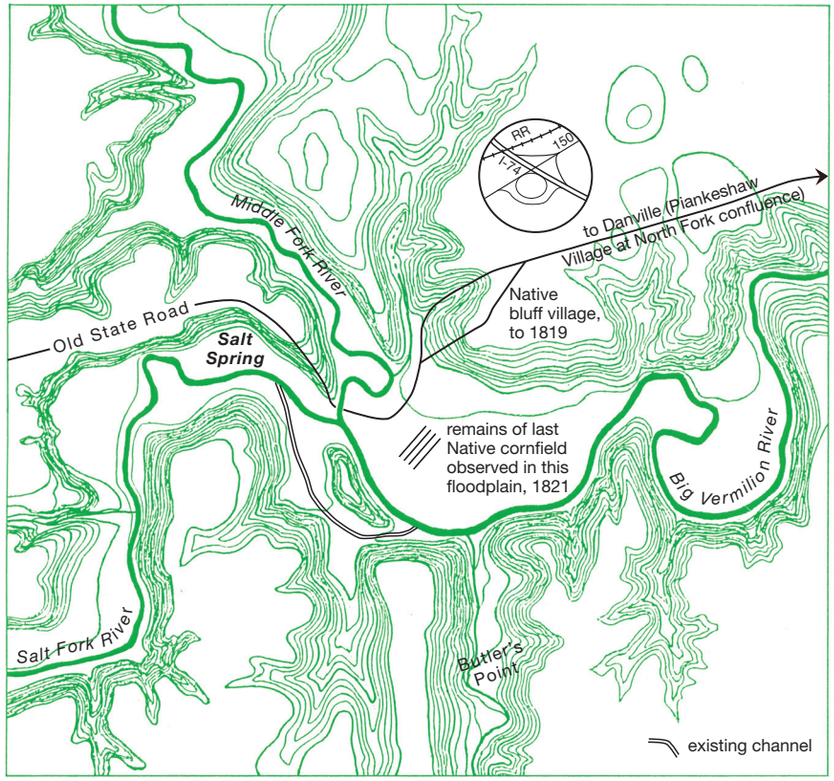
This excerpt from the first plat of Township 19 North, Range 12 West (2nd PM) is the first surveyed map of the area surrounding the confluence of the Salt Fork and Middle Fork of the Vermilion River of Vermilion County, Illinois. The Forks joined within section 16 of that township and flowed on eastward, as the "Big" Vermilion. This plat was drafted in 1821 at the regional Surveyor General's office in St. Louis, directly from information in the surveyor's Field Notes.

As the surveyor in the field had measured and laid out each new, one-mile section line, he had made note of the distance from the last section corner he had marked to each crossing his line had made of flowing water, and the direction and bearing of flow; as well as to each intersection of the line of his survey with a prairie-timber edge. The draftsman then plotted these section-line points onto the plat he was drafting and connected the points with randomly chosen lines, thus producing a crude map of river systems and the timber-prairie dichotomy.

Surveyor Joseph Borough, who surveyed this township in June of 1821, used the standard 80-chains-to-the-mile, 100-links-to-the-chain "Gunter" chain. He recorded his observations of three of the four sides of Section 16 more or less as follows:

> N between 16 & 17: 46 chains 80 links, a stream 100 links wide, runs East [Salt Fork], on which stream and the NW 1/4 of section 16 is a saline improved and in operation
>
> E(-W) between 9 & 16: 49 chains 36 links, a stream 130 links wide, runs SE [Middle Fork]
>
> N between 15 & 16: 3 chains 10 links, a stream 150 links wide, runs East [the Big Vermilion] rapid current. Land level. Soil rich this 1/2 mile in an old Indian field.

FIRST CONTOUR MAP, surveyed 1897

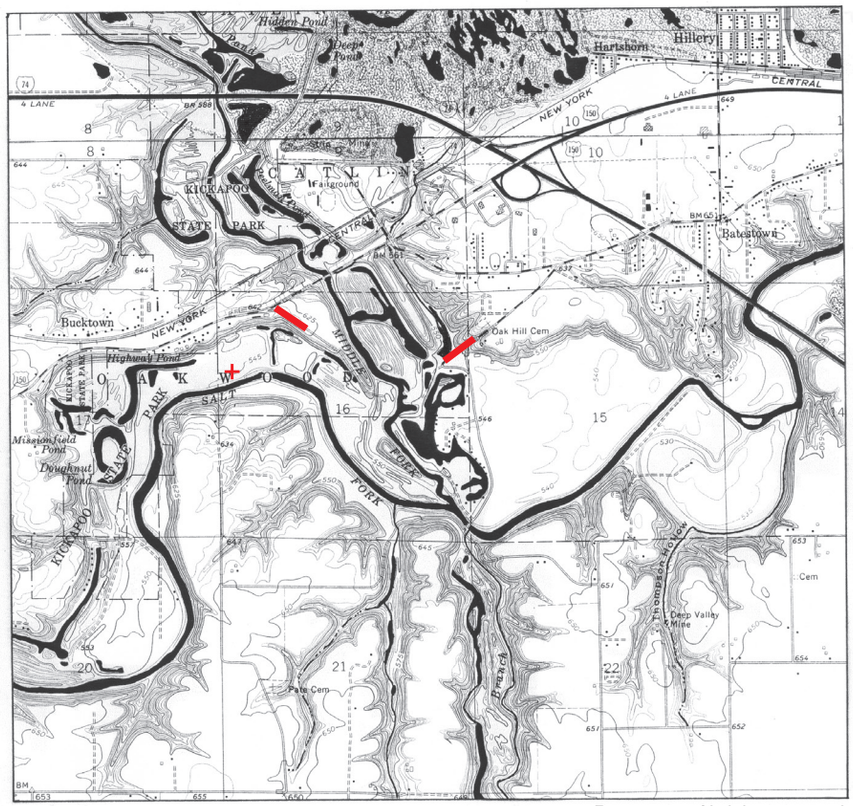


1897

This map shows the confluence of the Salt Fork and Middle Fork, whose combined waters flow on as the "Big Vermilion" River and, with the addition of the North Fork waters at Danville, empty into the Wabash River in eastern Indiana. Contours and river courses, here, have been extracted from a 1930 reprint of the USGS 15-minute Danville quadrangle, edition of 1900, which was drafted from an 1897 survey. Since survey of this map predates introduction of stripmining power shovels into the area in 1910, it may be considered to be an approximation of the original landscape of the area surrounding the historic salt springs. Surveying methods in 1897 were, of course, not as precise as aerial surveys of today, so this old map may be found to be a little distorted, here and there.

Note that in 1897, the forks joined upstream of the rare "monadnock" (free-standing residual hill). When the Middle Fork and Salt Fork originated as glacial meltwater torrents, the foot of the ridge between them was intact and the confluence was below (the monadnock), as it is today. Millennia of periodic flooding eroded away part of the dividing ridge, so that the channel of the Salt Fork has since alternated between above and below the monadnock. The peculiar diversion of the Salt Fork just west of the salt spring in this 1897 map may possibly have been a sign of early stripmining there, as it would seem to have blocked access to the salt spring from the floodplain to the west and it survives today only as a stripmine pond.

AERIAL SURVEY CONTOURS, 1966–1978



1966–78

Remnants of brick state road
Salt spring site

This map shows the confluence of the Salt Fork and Middle Fork generating the "Big" Vermilion River, as drafted from aerial surveys (issued 1966, photorevised 1978), after intensive stripmining of coal had rearranged surface contours and created a number of new water features. The 15-minute contour map issued in 1900 had to be drafted by estimating and generalizing on contours, using a minimum of survey lines run on the ground during the 1897 surveys, while contours drafted from aerial surveys in the late 1900s are state-of-the-art accurate. These two contour maps are reduced from the originals, adjusted here to the same scale, in order to compare the two, drafted 80 years apart.

the first record of white men visiting the saline site so well known to native villagers. By 1750, Jesuit Fathers, probably arriving via wilderness-portage waterway from Montreal or Mackinac, served as missionaries to Indians along the Vermilion, and reported the existence of established villages near the saline site (Tilton 1931). By about that time, French traders in the area had begun teaming up with local tribe members to make salt together (now using *iron* kettles provided by the French?) at the ancient lick (Beckwith 1879).

A story told by a John Heckwelder, as recounted by Richard White in The Middle Ground, implies that whites used more salt in their food than did the native peoples: An Algonquian shaman, whose voodoo-style magic had been unsuccessfully attempted against an unimpressionable white trader, blamed his failure on the fact that "whites ate too much salt and this inured them against [his] medicine." Since salt was the principal preservative of meat used by wilderness settlers, they must indeed have been well protected against native magic by the customary salt pork and bacon in their diet!

In 1765, a traveler's diary entry (George Croghan) characterized the Vermilion region as "the Pyanke-shaws hunting ground." The Piankeshaw, an Algonquian culture tribe related to the Miami (the mother tribe, which, by 1768, was controlling the Maumee-Wabash portage in northeastern Indiana), were first known in history as villagers on the Wabash River, both upstream from the mouth of the Vermilion, at a site near present-day Lafayette, Indiana, and downstream, in the Vincennes area (Tanner). By that year, except for the Big Vermilion River valley and land south of Vincennes, most of the territory in which the Piankeshaw claimed hunting privileges lay directly east of the Wabash, in Indiana, adjoining Miami tribal territory. *The vast headwater prairie rising between the Illinois and Wabash Rivers was then the territory of the Kickapoo. The more prairie-oriented branch of this culture group was sometimes designated separately as the "Mascouten" (Tanner), "people of treeless lands," "people of the land of* [prairie?] *fire." Several Kickapoo villages also thrived on the banks of the Wabash eastward in Indiana.*

Sometime in the 1790s, the Piankeshaw, weakened and diminished in numbers, abandoned their major village on the bluff overlooking the confluence of the North Fork with the Big Vermilion (site of present-day Danville) and withdrew down the Wabash to join tribal brothers in the Vincennes area. The vigorous Kickapoo then moved in, thus adding the Vermilion salt springs, the confluence of the Salt Fork and Middle Fork, and the Big Vermilion River valley to their already established Wabash River villages and their headwaters-prairie territory of Illinois.

Kickapoo arrivals established a string-town village along the bluffs overlooking the large, arable bottomland on the north side of the Big Vermilion, just east of the Middle Fork crossing. Supplementing their floodplain-grown squash and corn, the villagers' meat supply was assured along game trails centering from several different directions on the salt lick.

An early chronicler, writing for "The Illinois monthly magazine" in 1831, describes moonlit night hunts at Illinois salt licks. The hunter concealed himself along the wooded margin of the bare-ground, hoof-imprinted salt meadow, and waited for the twilight-time movement of deer toward the lick, where a succession of animals might spend hours into the night patiently licking the salt-impregnated earth. As the rising moon flooded the bare, unshaded salt meadow with half-light, the usually wary deer became easy targets for the waiting hunter.

During the late 1700s to early 1800s, the Vermilion saline village of the Kickapoo became a crossroads for trails between Kickapoo villages on the Wabash River and those in the headwaters prairie. A major (probably ancient) trail westward from the Kickapoo of the Vermilion village passed "Big Grove" and the future Urbana site on the north, and headed northwest toward the "Grand Village of the Kickapoo of the Prairie" (near Moraine View State Park east of Bloomington).

Much of this well-used path, all signs of which have now vanished, may have been adopted later to serve as part of the Fort Clark Road to the Military Tract, on the far side of the Illinois River, crossing at present-day Peoria. Military Tract lands were purchasable only with warrants issued as pay for military service in the War of 1812, and thus were traveled to by land-seeking Euro-Americans earlier than most of our east-central Illinois area.

The village of the Kickapoo of the Vermilion near the salt springs persisted until the purchase treaty of 1819. Abandoned Kickapoo cornfields were observed in the floodplain by the 1821 government land surveyor Joseph Borough and mentioned in his field notes.

Of native tribes along the Big Vermilion that would have been known to the pre-settlement Euro-American "Diary Keepers," the Piankeshaw hunted near the salt springs for nearly a century and a half, followed by the Kickapoo, who occupied their confluence village near the salt springs for little more than a generation—long enough, however, to lend their name to the state park later established in the vicinity.

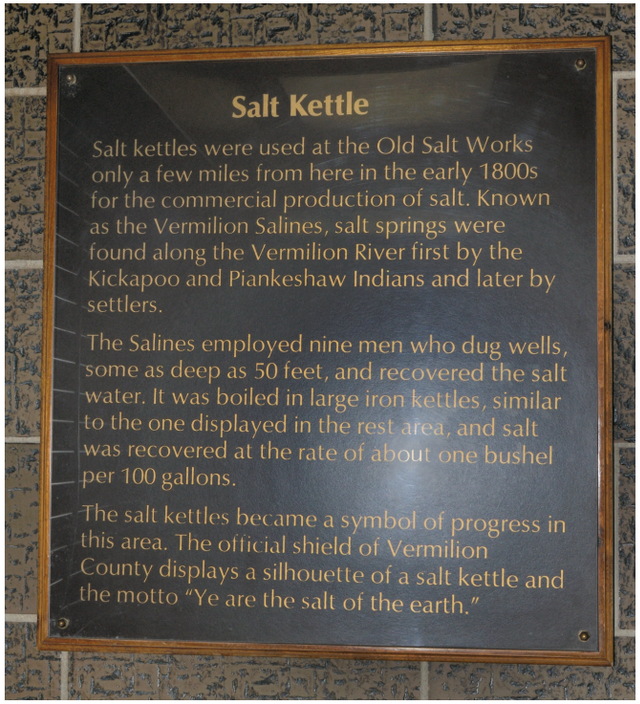
On August 30, 1819, the Kickapoo of the Vermilion ceded lands to the United States that included the Vermilion saline, and withdrew for a time northwestward to join tribal brothers around the headwaters of the Sangamon and the two Vermilions (Tanner). Twenty-three days later (on September 22) entrepreneurs out of Fort Harrison (Terre Haute) had already arrived at the salt springs to begin the process that would put the ancient salt lick to work as a commercial operation, a venture that began production within a month. Soon, buyers were transporting their bags of purchased salt to downstream locations by pirogue; elsewhere, by horse and wagon or across the saddle (Beckwith, Belting).

It was almost two years later that government surveyors finally established the section line northward beside the, by then, busy "Salt Works," as they transformed the ancient hunting ground into real estate. The plat of the First Government Survey of 1821 notes "Saline in operation," just east of the section line. A double bank of mile-square sections encircling the salt springs was withheld from sale for a time and marked "R" on the first government land plats, that is, *Reserved* as federal mineral lands; meaning, in effect, that the timber near the salt resource was reserved to provide the copious fuel needed to boil the brine down to dry salt. Three other federal saline reserves in Illinois were located southward: on Saline Creek in Gallatin County, on Shoal Creek in Bond County, and on Big Muddy Creek in Jackson County.

Wells were dug about 15 or 20 feet deep at the Vermilion "Salt Works," the brine drawn up and sluiced into wooden troughs, which carried it to great, black iron kettles for boiling down into dry salt. (One of the original kettles now decorates the Welcome Center on westbound I-74 west of Danville, photo this page.) One hundred and seventy gallons from these wells had to be evaporated, on average, to produce one bushel of salt. Later, deeper wells produced a stronger brine, which required only one hundred gallons to produce a bushel of salt (Beckwith). A traveler, Chester A. Loomis, visiting the Vermilion saline "manufactory" in June of 1825, described in his diary an operation yielding about 100 bushels of salt per week, from "an arch of 20 kettles." Market price at the time was up to $1.50 a bushel. Large quantities of wood had to be felled, hewn into firewood, and burned to evaporate the brine down to an appreciable amount of salt—a limiting factor, as the abundant coal of the area was not yet being exploited. By 1831, the Salt Works were practically abandoned, as competitive advantage was lost when a government pier was opened at the mouth of the Chicago River, which could receive and distribute large salt shipments from more productive operations in the East (Belting).

Postscript

In 1888, the eighty-acre tract within which the historic Vermilion saline lay was purchased by the Consolidated Coal Company of St. Louis. In 1910, stripmining power shovels were brought into the saline vicinity. In succeeding decades, much of the area around this influential natural feature of pre-settlement Vermilion County was greatly altered by the stripmining operation, as layers of the coal lying beneath the surface were extracted in some places, leaving the hillocks and ponds that are familiar features of today's Kickapoo State Park. (The saline site itself is now private property and lies just outside the present park boundary, eastward in the floodplain.) Near-surface, natural conduit systems carrying brine to the surface were modified in the excavating and backfilling process, but, at low river flow, dilute saltwater still oozes into the bottom of holes dug at or near the old salt works site.



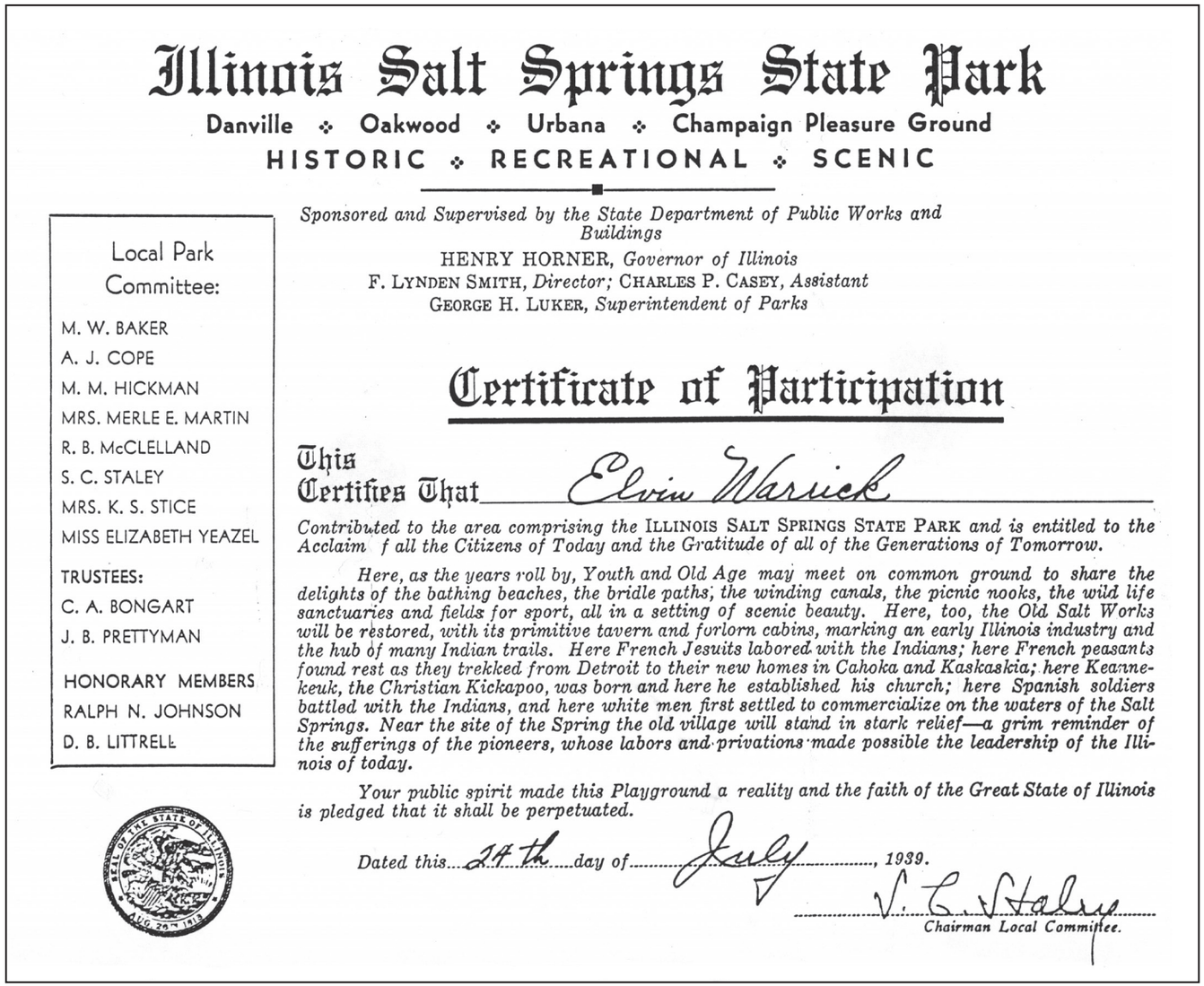
In January 1998, water from a small spring in the floodplain, found flowing at a rate of five to ten gallons per minute from a round opening—possibly the top of an old coalmining exploratory shaft—about four hundred yards west of the old salt factory site (thus inside Kickapoo State Park) was collected by retired Illinois State Geological Survey scientist Philip Reed and analyzed for mineral content by the Illinois State Water Survey. Values determined for sulfate, calcium, sodium, and chloride (182, 156, 89.8, and 86.6 mg per liter, i.e., parts per million, respectively) show the discharge from this small, running spring to be quite dilute compared to estimates of the rich salinity of the Vermilion seep spring once located nearby. Moreover, in the existing spring water, the proportion of total solids attributed to sodium and chloride (salt) is only about 30 percent compared to about 85 percent in seawater solids (the latter percentage likely, as well, in the original Vermilion salt-spring water, which is thought to have originated as deep-deposit

The Salt Kettle Rest Area and Welcome Center on Interstate 74, 7 miles west of Danville, Illinois.

fossil seawater). While the 56 percent combined sulfate and calcium in the remaining portion of total mineral solids in the existing spring water may derive from the high-sulfur bituminous coal beds and limestone beds of Pennsylvanian deposits near the surface, the mere presence of 30 percent salt would confirm some sustained contribution from the original deep geological source of the old Vermilion salt-spring waters.

The forerunner of Kickapoo State Park in Vermilion County was established in 1939 as "Illinois Salt Springs State Park," (although, as already noted, the actual salt springs site lay outside the park boundary).

An eerie remnant of historically preserved brick road still descends from the east toward the old crossing of the Middle Fork. Where today's everyday road traffic veers left and down, to skirt the edge of the magnificent floodplain field once planted by Piankeshaw and Kickapoo women, the old brick road, overgrown with weeds, continues straight on and down into the empty gloom of pondy bottomland woods. Just across the Middle Fork, in the northside floodplain of the Salt Fork, lies the site of the ancient, now stripmine-obliterated salt lick, a site that for thousands of years was a major focus of herbivore-game and Indian activity, a site so central to pioneer life at the founding of Vermilion County in 1826 that it served for a time as the first county seat, a site that indirectly influenced the direction of a modern interstate highway today roaring with cross-country traffic, a site now indistinguishable in the deserted, stripmined and overgrown floodplain.



Illinois Salt Springs State Park

Danville ❖ Oakwood ❖ Urbana ❖ Champaign Pleasure Ground

HISTORIC ❖ RECREATIONAL ❖ SCENIC

Local Park Committee:

M. W. BAKER
A. J. COPE
M. M. HICKMAN
MRS. MERLE E. MARTIN
R. B. McCLELLAND
S. C. STALEY
MRS. K. S. STICE
MISS ELIZABETH YEAZEL

TRUSTEES:
C. A. BONGART
J. B. PRETTYMAN

HONORARY MEMBERS
RALPH N. JOHNSON
D. B. LITTRELL

Sponsored and Supervised by the State Department of Public Works and Buildings

HENRY HORNER, *Governor of Illinois*
F. LYNDEN SMITH, *Director;* CHARLES P. CASEY, *Assistant*
GEORGE H. LUKER, *Superintendent of Parks*

Certificate of Participation

This Certifies That Elvin Warrick

Contributed to the area comprising the ILLINOIS SALT SPRINGS STATE PARK *and is entitled to the Acclaim f all the Citizens of Today and the Gratitude of all of the Generations of Tomorrow.*

Here, as the years roll by, Youth and Old Age may meet on common ground to share the delights of the bathing beaches, the bridle paths, the winding canals, the picnic nooks, the wild life sanctuaries and fields for sport, all in a setting of scenic beauty. Here, too, the Old Salt Works will be restored, with its primitive tavern and forlorn cabins, marking an early Illinois industry and the hub of many Indian trails. Here French Jesuits labored with the Indians; here French peasants found rest as they trekked from Detroit to their new homes in Cahoka and Kaskaskia; here Keanne-keuk, the Christian Kickapoo, was born and here he established his church; here Spanish soldiers battled with the Indians, and here white men first settled to commercialize on the waters of the Salt Springs. Near the site of the Spring the old village will stand in stark relief—a grim reminder of the sufferings of the pioneers, whose labors and privations made possible the leadership of the Illinois of today.

Your public spirit made this Playground a reality and the faith of the Great State of Illinois is pledged that it shall be perpetuated.

Dated this 24th *day of* July, *1939.*

V. C. Staley
Chairman Local Committee.

The forerunner of Kickapoo State Park in Vermilion County was established in 1939 as "Illinois Salt Springs State Park."

A Saltwater-Logged, Bedrock Layercake

The origin of the mineral-laced waters once being discharged at the Vermilion saline site remains something of a puzzle. If we are to follow a line of conjecture taken by investigators, we must first summarize part of the geologic history of our area: the Paleozoic Era—the time of primitive life, (*Paleo*–ancient; *zoic*–life) 600 to 230 million years ago—which scientists divide into seven

epochs, according to the types of organisms represented in fossil form in each.

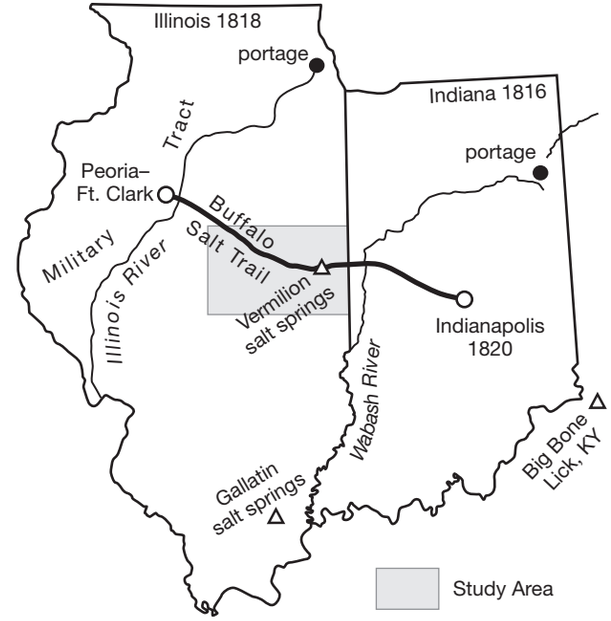
By about 280 million years ago, at the beginning of the "Permian" (as the *final* epoch assigned to the Paleozoic is named), the surface of our area had at last risen permanently out of the sea. *(Thus no bedrock from the Permian epoch exists beneath our feet. All traces of that time in our area, as well as the ensuing dinosaur age, are lost to surface erosion.)* Buried beneath the new land surface and beneath the alternating coal and limestone layers built up during fluctuating sea levels of the Pennsylvanian epoch just preceding the Permian, lay a sequence of bedrock layers that had originated as sediments collecting at sea bottom ever since the late "Cambrian" (as the *oldest* of the seven epochs assigned to the Paleozoic is named). As these sea-bottom layers were being deposited, the region that is now Central Illinois had warped shallowly downward in the center into a wide spoon or trough shape, forming what is called "the Illinois Basin." Our study area lies near the eastern rim of this bedrock basin.

It may be just a coincidence that an apparent "line" made by four of the five known salt/mineral-spring sites in our area parallels, to its east, the north-south orientation of the major syncline occurring near the eastern rim of the Illinois Basin. However, it would be reasonable to speculate that the spring sites may, in fact, derive from structural fracturing along the rim of the Basin, just where the downward slope into the first syncline begins, though this is yet to be investigated.

The salty waters of the historic Vermilion saline are thought *not* to have originated, as one might imagine, in thick, buried beds of evaporated seawater. No "evaporitic strata" are known to exist in the Paleozoic layers beneath our central basin. But brackish water *is* found, stored in deep, water-permeable, mid-to-early Paleozoic rock throughout the Illinois Basin. The fact that its saltiness increases with depth was demonstrated by an Allied Chemical Corporation well, bored about 8 miles east of the old salt works site, to a depth of more than a mile and ending in sandstones deposited during the late Cambrian epoch (a time when land was barren of life, but many forms of multi-cellular marine life were developing in the warm seas of continental shelves). From about 10,000 milligrams per liter measured at the base of the Pennsylvanian strata, mineral content of the strata-stored water increased twenty-fold, to around 200,000 milligrams per liter, in the Cambrian rocks (Mann 1980)!

Soft layers of sediments settling on the bottom of the sea become densely compressed, as most of the water content is squeezed up and out by the weight of new sediments settling over them. In time, these dense, compressed layers harden into rock, cemented with calcite and other minerals present in the seawater. The small amount of residual seawater (a sort of concentrated "fossil" seawater) remaining trapped in the pores of these compressed, hardened layers is called connate water (Latin: "born with" or "built-in"). After the surface was lifted above sea level here, downward infiltration into the barely permeable bedrock by millions of years of freshwater precipitation to the surface ("meteoric water") has flushed and diluted these connate waters in a gradient downward through the bedrock, the deepest waters remaining the saltiest. Deep hydraulic pressure may then have discovered release through cracks and fractures of bedrock-warping, forcing some of the deepest, saltiest connate water the long way up to the surface, to emerge as salt springs where surface conditions were right, for example, where streams had carried away loose surface material almost down to the top of the bedrock. Waters of the rare salt springs of our glacial-till-laden area thus emerged only in floodplain sites (Kolata, Nelson).

From written accounts of the old Vermilion salt works, estimates have been made of the salinity of the water used in salt production there. These estimates seem to place the origin of these waters in Paleozoic marine beds at a depth of more than 4,000(!) feet below the surface—waters preserved, perhaps, from the warm, shallow seas of more than 500 million years ago, in that "late Cambrian explosion" of newly evolving,



BUFFALO TRAILS CONNECTING SALT SPRINGS WERE AS SIGNIFICANT TO EARLY LAND TRAVEL AS PORTAGE SITES WERE TO WATERWAY TRAVEL

The historic wagon road, shown above, opened Central Illinois to settlers arriving overland out of the East. This bi-state road—which connected Indianapolis (established 1820) with Peoria/Fort Clark (gateway to the "Military Tract")—was officially approved, surveyed, and staked from 1826–1828, with modifications in 1832 and 1834. Its western half, in the final version, closely followed a trail that is thought to have been established by buffalo moving out of the Great Plains toward the Vermilion salt lick, and beyond. (Because it connected with the first "National Road," completed from Cumberland, Maryland, at least as far west as Indianapolis by 1836, the travel convenience offered by this informal, ungraded, bi-state wagon road must have enhanced the major land boom that took place in east-central Illinois in 1836.)

An imperative for early settlement in the pre-railroad wilderness was a local source of salt for meat preservation. Pioneers then adapted the well-chosen, well-beaten animal paths connecting salt springs to their own travel needs. The saying in our area in pre-railroad times was "All roads lead to the Salt Works."

Today, Interstate 74, carrying major cross-country traffic between Indianapolis and Peoria, parallels the pioneer wagon road—and, in part, the "salt trail" that preceded it. Locations of two other well-known salt springs of the pioneer Midwest are also noted.

multi-cellular, exoskeletal marine life, when, indeed, there was no life on land? *(During the short time that the Vermilion "manufactory" was in operation, were area farmers salting down their freshly slaughtered pork with a preservative "mined" by Nature from hundreds-of-millions-of-years-old sea-bottom deposits, layered three-fourths of a mile beneath the surface landscape?)* "The evidence is inconclusive; yet no other source for the salt or of a mechanism to move it upward is apparent in the case of Vermilion County salt springs" (Mann 1980).

THE FIRST TWO CENTURIES OF EURO-AMERICAN PRESENCE EAST OF THE MISSISSIPPI, 1607–1803

European-based conquest of mid-latitude North America, from the Atlantic seaboard, across the Appalachian crest and on westward to the banks of the great river bisecting the Central Basin (excluding Spanish Florida), was completed in just two centuries—the 1600s and the 1700s—the second and third centuries of the divided European presence in North America.

In the dawn of the 1600s, English and French colonists were just planting their first permanent settlements at the edge of an infinite wilderness, sparsely peopled by mysterious hunter-tillers. In 1607, the English established a claim to the seaboard lands east of the Appalachians when they founded Jamestown near the mouth of the James River (Virginia). The following year, Quebec was founded by the French, at the gateway to the inland waterway route that they later came to dominate—the St. Lawrence River into the Great Lakes—and then, via portage, into the entire eastern half of the upper Mississippi River watershed, *within which region our study area is located.*

By the twilight of the 1700s, as an assemblage of august Native chiefs agreed to the terms of the 1795 Treaty of Greenville (Ohio), representatives of the original inhabitants of lands from the Northern Appalachians to the upper Mississippi River thus relinquished not just rights to particular tracts of land, but, finally, their long-held hopes of resisting the westward flow of an overwhelming population of Euro-American-style farmers. (Both populations grew grain and vegetable crops, but, in the final analysis, it was the newcomers' control of their animal-product resource through animal husbandry, the attendant high rate of their population increase, and their subsequent ever-expanding land need that was progressively and inevitably destroying the habitat of game animals necessary to maintain the hunting lifestyle of the Native.)

Just eight years after the Greenville capitulation, in 1803, the young American government was relieving Native tribes of hunting lands right up to the Mississippi riverbank, through a settlement known as "The Kaskaskia Purchase." *In this treaty, a tiny remnant of the Illinois nation of tribes sold to the U.S. government part of the area chosen for this study.* The following chapters of this book chronicle the Indian Land Cessions/Sales in detail.

Then, in 1805, land surveyors of the United States government, perhaps heartened by the 1803 Louisiana Purchase bonanza of lands west of the Mississippi, were sent into the Kaskaskia Purchase area to begin processing ancient hunting territory into privately-ownable "real estate," defined by compass-directed straight lines and perpendicular corners, divisible into tracts that would be utilized in a new way, by a new Illinois citizenry. (See Part 3 of this volume.)

The conversion of these early-surveyed tracts in the heart of the once remote Central Basin from hunting territory to future stock-and-crop farmland, a conversion both remarkable and tragic, came just 198 years after Jamestown.

Land Claims, Trading Alliances, and Wars

When French explorer LaSalle completed his exploration of the lower Mississippi River in 1682, he proclaimed the Mississippi River valley and the lands eastward, up to the Appalachian crest, to be "New France," a nominal status that held up for some eighty years.

According to tradition, a well-used overland trail (the French word is "trace") of the French era here crossed our east-central Illinois headwater area diagonally, northwest to southeast, spanning the land between the two major canoeways: the Illinois River at Creve Coeur (near present-day Peoria) and the Wabash River at Terre Haute.

Another French trace (perhaps reinforcing older Indian trails), beginning at the Mississippi River at (French) Kaskaskia below St. Louis, crossed the southeast corner of our area on a route toward French-founded Detroit. Reputedly, the latter trace was long detectable to some Edgar County farmers, plowing across its well-packed, horseback-traveled earth!

Indian names, in the French phonetic spelling, survive in our area, one example being the Embarras River, which in English phonetic spelling was the Ambraw. And, of course, the very name of our state: ILLINOIS!

NORTH AMERICAN HISTORY through the two centuries between Jamestown, 1607, and the Kaskaskia Purchase, 1803, followed by the beginning of the Illinois land surveys, 1805, was not that which is now stereotyped by the ultimate outcome: an aggressive invader with technological advantages crowds out the less numerous Natives in a race-versus-race, invader-versus-Native scenario. Rather—for the first century and a half—old feuds between the European invaders themselves (the English versus the French) and feuds between Native tribal groupings (the Iroquois versus the Algonquian-speakers west of the mountains) took marked precedence over any potential race-versus-race conflict.

From 1641 until the "Grand Settlement of 1701" at Detroit, the Iroquois made fierce, Native-versus-Native war westward, displacing Algonquians south of the lakes

from the fur-producing lands that they (the Iroquois) coveted for trade with their British partners.

After the Iroquoian pullback at the outset of the 1700s, tribal occupation in the Great Lakes/Ohio/upper Mississippi triangle regrouped into an historically observed configuration. *The periphery of our study area became home to Kickapoo and Piankeshaw, but the uninviting heart of our marshy, tall-grass-prairie area supported no villages. Almost a no-man's land, it served, however, as a rich, seasonal hunting ground for Potawatomi and others, who hunted and fished along our small timber-hedged streams, returning year after year to favorite campsites.*

A few years after termination of the Iroquois Wars, Mesquakie (Fox) and allies made Native-versus-Native war south from the Lakes (1710–1740), appropriating lands of the Illinois tribes and others of the Illinois River watershed. *A timber-edge trail through our area, probably long established along the head-to-head linear courses of the two Vermilion Rivers (one emptying into the Wabash, the other into the Illinois) historically was called "the Sauk and Fox trail," perhaps because it was heavily used by those tribes during the wartime years as they moved between the two major rivers.*

The Fox Wars became so unsettling to the fur trade that the French joined in, in an effort to weaken the warlike Fox. *A 1730 battle between the French (aided by their Illinois Nation allies) and the Fox, on the headwater plain at Arrowsmith, near the source of the Sangamon River in our study area, concluded with a Fox defeat, and destruction of the (now archaeologically studied) fort that the Fox had erected at the west "point" of Cheyney's Grove in McLean County.*

EARLY IN THE 1600s, in a sort of double dichotomy, the English and the Iroquois had joined together in a productive furs-for-imports alliance, while the French and the Algonquian-speakers teamed up toward the same end. These two mutually advantageous, inter-racial relationships created a "Middle Ground" (Richard White, 1991) that dominated the relatively peaceful first century-and-a-half of Euro–Native interaction, from the Finger Lakes region of New York State to the upper Mississippi. Both alliances stemmed from the European craving for fine wild furs not readily available in Europe (especially the fashionable beaver fur), balanced by Native fascination with metalware, guns, cloth, and even ready-to-wear garments, which they themselves could not produce. Although Europeans participated primarily for profit, the native agenda required development of a sense of kinship with trading partners. Native concept of trade was as a generous gift exchange between kin.

Beaver have made a comeback in east-central Illinois, damming many a drainage brook in our area. Traditionally, though, the best, and the thickest, prime beaver fur was the natural product of the cooler climates north of the Wisconsin River.

BETWEEN 1689 AND 1763, England and France were intermittently at war in Europe, winding up with the Seven Years War and the Treaty of Paris of 1763. These hostilities on the Continent were reflected in the simultaneous English–French relationship in North America. Until the mid-1700s, however, the two nationalities avoided serious confrontation on this continent by colonizing different areas. (See map, page iii of this book.)

French missionary priests, soldiers, hunters, and traders developed a widely spaced chain of missions, which became trading posts, which became forts, which became French villages ringed with Indian suburbs along a great water-arc of influence, from the St. Lawrence, to the Great Lakes, and well down the east side of the Mississippi watershed. The French population south of the Lakes, including our study area, was never large, however. French agricultural practices here at the time were informal and of little threat to the Natives, with whom the French developed a natural rapport.

By contrast, the English on the Atlantic seaboard tried to duplicate the orderly culture and productive rural and urban life of their Mother England. By the mid-1700s, British outnumbered French in eastern North America by 23 to 1. British subjects on the populous Atlantic seaboard began eyeing the underoccupied lands of "the west-flowing rivers," on the other side of the Appalachians. Land companies were formed and surveyors were sent in (including a young George Washington). Thus confronted, the outnumbered French, supported by their Algonquian allies, fought the British, supported by their Iroquois allies, for sovereignty of "New France," successfully for a time, in the "French and Indian War," commencing in 1754. By 1760, however, the British military had routed the French from all their forts along the interior waterways, although a formal treaty was not signed until 1763, as part of the agreement ending the Seven Years War in Europe.

The French and Indian War—in which east-central Illinois played little part—was the second genre of war in Northwest Territory lands. Following earlier Native-versus-Native wars, this war was a White–Native alliance versus a White–Native alliance.

Although the British had replaced the small French population in the fort-villages of New France by the end of the French and Indian War in 1760, strongly anti-British Native inhabitants of the region remained. With the encouragement and leadership of Ottawa war-chief Pontiac, a tribally diverse collection of Native warriors handily ousted British military from all the former French forts that they had only recently occupied, except those at Detroit and Pittsburgh. For a time, few Europeans remained west of the Appalachian mountains.

Pontiac's agenda, however, was not Native versus White, but specifically Native versus the hated British, who had displaced the easygoing, generous, gift-giving French. Pontiac's War was the third kind of war in the Northwest Territory: united Native versus a single European nationality. It was the only significant racial union of Natives opposing Whites to occur.

The European Presence in the "Old Northwest Territory," 1600–1800

1600s Fur Trade Alliances; French Explore Mississippi Valley

1634 Jean Nicolet is first European to visit NW Territory. Sent by Quebec Governor Champlain to promote French/Algonquian (western) fur-trade alliance.
1641–1701 Iroquois make war into NW Territory to appropriate Algonquian fur lands for British/Iroquois fur-trade alliance. Algonquians displaced northwestward.

1673 Jolliet, Marquette on Miss. R. to Arkansas R., return via Illinois R.
1682 La Salle proclaims "New France," Appalachians to Miss. R.
1699 Cahokia (Fr.) established at "American Bottom" on Miss. R.

1700s Euro-American Towns West of Appalachians

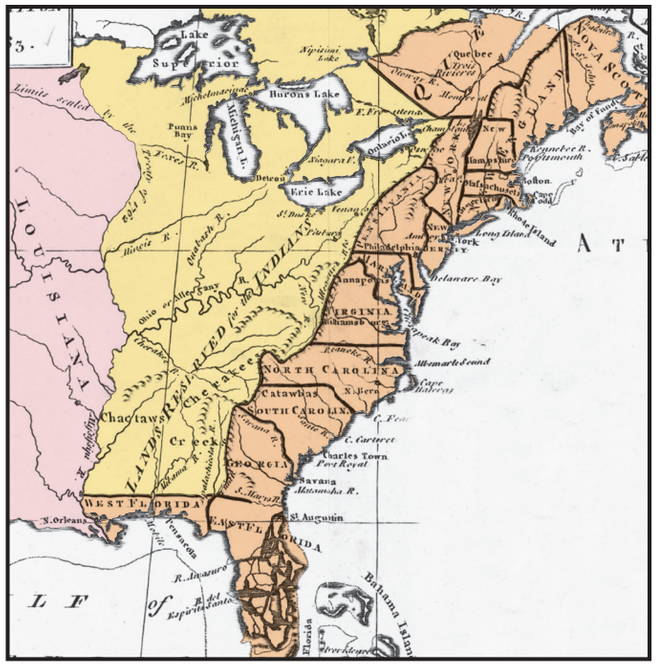
1701 Detroit (Fr.) est. after Grand Settlement of Iroquois War
1703 Kaskaskia (Fr.) on Miss. R.
1732 Vincennes (Fr.), Wabash R.

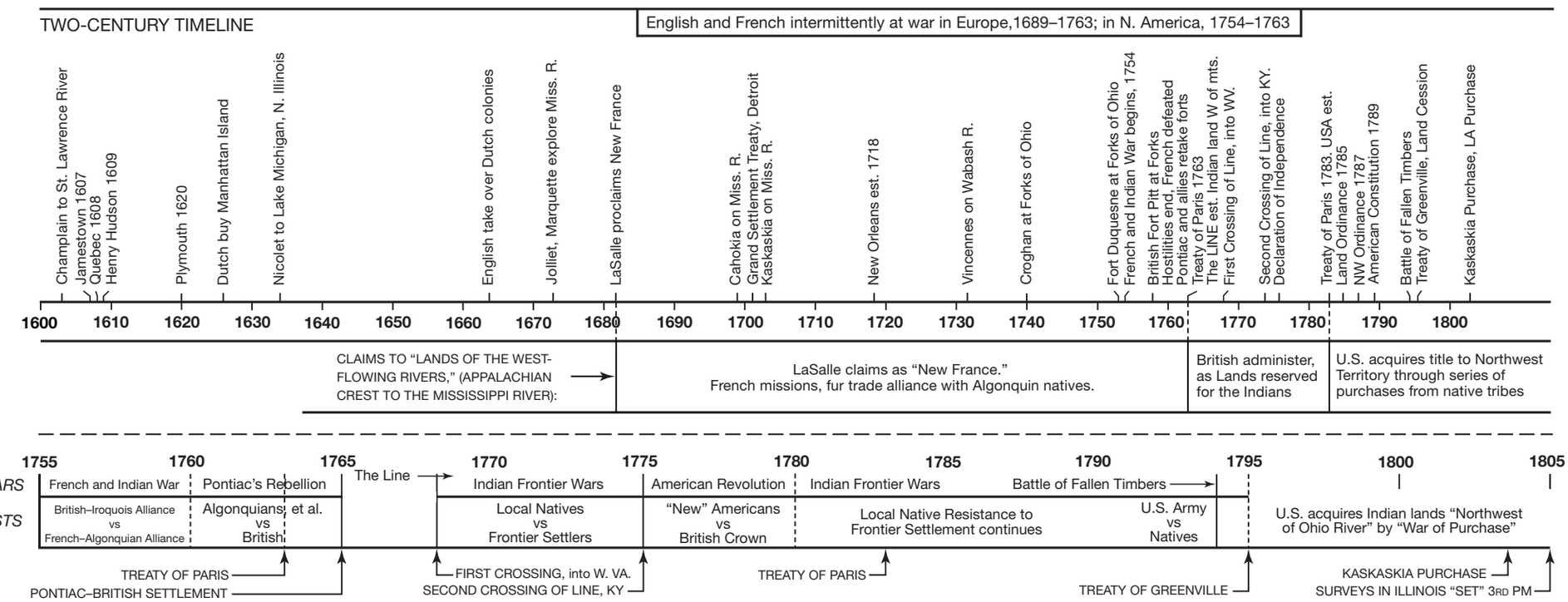
1740 [English Croghan operates trading post at Forks of Ohio]

European Claims to Land East of Mississippi Extinguished

1753 [French fort at Forks of Ohio]
1754–60 French and Indian War
1760–65 Pontiac vs British War
1763 French claims extinguished –British Proclamation LINE est.
1768 First Crossing of Line, into WV
1774 Second Crossing, into KY
1775–80 American Revolution
1783 British claims extinguished
1794 Battle of Fallen Timbers slows Indian raids on settlements
1795 Treaty of Greenville leads to Indian land cessions, by treaty

This official British map, issued in 1763, marks the new boundaries resulting from the defeat of France and Spain in the Seven Years War in Europe, which coincided with the French and Indian War in America. A dividing line was drawn along the crest of the Appalachians, called the British Proclamation Line of 1763. The area west of the mountains was, in theory, to be reserved for the Indians, and colonists were prohibited (on paper) from settling or hunting there. Although the British had taken all the French forts in what had been known as New France by 1760, Pontiac and his united warriors had retaken from the British all but Fort Pitt and Detroit before the Treaty of Paris was negotiated in 1763. The (destined to be temporary) Line was proclaimed in apparent acceptance of the de facto control of the area by the Indians under Pontiac's leadership.





By October 1763, as knowledge of the English–French final peace settlement in Paris, on February 10, had begun to infiltrate the Lakes/Ohio/Illinois country, news of Pontiac's successful Indian rebellion against the British had, in turn, reached the Court of St. James in London. The British, accepting the *de facto* situation brought about by Pontiac, then proclaimed a LINE along the crest of the Appalachians, lands to the west of which, and on to the banks of the Mississippi [former New France!], were to be "reserved for the Indians." White settlement on these lands was prohibited until treaties had been negotiated with the Natives.

The "Proclamation Line of 1763" persisted in theory in various westward permutations for thirty-two years, until the Treaty of Greenville between Native leaders and the United States was signed in 1795.

Chance Meeting of Two Legends: Pontiac, Croghan in East-Central Illinois

Distant European treaties were of little importance to Pontiac, if he even knew about them, holed up at his headquarters in still French-dominated Kaskaskia on the Mississippi River, from which he directed continuing harassment of the British perimeter after the 1763 Treaty of Paris.

An influential agent of the British "Indian Department" at the time of Pontiac's Rebellion, Irish-born George Croghan, decided to remedy the situation. After his challenging career as a high-volume, west-of-the-mountains trader had left him bankrupt but uniquely knowledgeable about Indian concerns, Croghan was appointed "Deputy Agent for the Northern [Indian] Department."

In the spring of 1765, George Croghan undertook the venture of pacifying Pontiac and bringing him into the British fold. Accompanied by a delegation of supportive upper Ohio Valley Shawnee, Delaware, and Mingo, he departed Pittsburgh in a flotilla of two modest boats, manned by White crews, on the dangerous thousand-mile voyage to Kaskaskia.

Croghan's diaries allow us to reconstruct the story of that remarkable trip. Ever the tourist, Croghan took time out on his way downstream to visit Big Bone Lick, a few miles south of the Ohio River route, where he marveled at the huge "elephant tusks."

His appreciative diary entries go on to describe an idyllic springtime float down what was then often called "the Beautiful River." The dangerous dividing line between hostile Southern-versus-Northern Indians, the Ohio riverbanks were empty of any signs of humans. As if in some wilderness Eden, herds of deer and elk drank at the water's edge; flocking water birds rose and settled; great fish leaped at the boats' approach.

With the party camping nightly in open view on the riverbank, all continued to go well as the small flotilla passed the mouth of the Wabash River where it flowed into the Ohio from the north. Only a few days' journey remained before the great confluence would be reached, and the boats would turn upstream into the upper Mississippi to move toward Kaskaskia, when disaster struck. A party of 80 raiding Kickapoo, motives unclear but possibly attracted by several bales of European-style "presents" loaded in the boats, attacked the camp at daybreak (June 8, 1765). Two Whites and three Shawnee were killed. Croghan himself received a tomahawk blow to the head, but as he joked later, "the hatchet would not enter . . ." so thick a skull as his!

The Shawnee survivors indignantly reprimanded the foolhardy Kickapoo, who soon realized that they had offended a diplomatic delegation of the powerful, warlike, and vengeful Shawnee. The surviving Indian delegates were released, and continued on to find Pontiac, to whom they related terms of the Croghan pacification proposal. Croghan, as prisoner, was marched cross-country toward Kickapoo headquarters at Ouiatenon (near present-day Lafayette, Indiana). *Crossing the southeast corner of our study area, Croghan wrote detailed descriptions of the natural scene at the edge of our great prairie in his diary (see "Bountiful Hunting Grounds" section, page 52).*

At Ouitenon, the Kickapoo counseled the release of Croghan and party. Once more on his way to find Pontiac, Croghan again struck out on the Detroit-Kaskaskia Trace, this time southwestward across our area.

Meanwhile, Pontiac, finally convinced that the defeated French were no longer in a position to materially back his cause with gunpowder and other supplies for waging war, and that the British had softened their arrogant stance toward Natives, had decided to go along with Croghan's proposals, call off hostilities, and make amends with the British.

On July 18, 1765, Croghan was astonished to see Pontiac and his party walking straight toward him on the Detroit-Kaskaskia Trace, fully aware of, and accepting, his message. *These two great men of action, Pontiac and Croghan, these charismatic "men of the hour," met for the first time, face to face, about four miles east of present-day Champaign County, just inside what is now Edgar County. The presumed site of this surprise encounter is marked by a modern monument west of U.S. Highway 150.*

Of all the momentous events of those times, this was the only significant scene played out in our sparsely populated prairie area!

The two parties merged and traveled northeast to hold conferences at Ouiatenon, and later at Detroit, where a peace settlement was finalized in late August (1765). Thereafter, Pontiac, reversing his role, became very friendly with the British, who had begun to play the old, benevolent French role, but he always insisted that, as the French had never owned the Indian land they claimed, so the British, in conquering the French, likewise had no claim to it.

The fruits of peace soon became evident, as the theretofore "suffering traders" reopened the Native market after Pontiac's War. "The summer of 1766 [saw] a trade boom that was without precedent and that was never to be matched again" (Van Every). The counsel of Native prophets to return to the old Native technologies was forgotten as the fur-for-import trade resumed full force.

(Other wild skins, particularly those of the whitetail deer, now often supplemented the pelts of the diminishing beaver.)

The New Americans

By 1750, British North America was also home to people of a variety of other European origins. The Dutch and Swedes, whose early colonies had been appropriated by the English, and boatloads of Palatinate Germans, French Huguenots, Swiss Calvinists, Scotch-Irish, and Irish had settled into the fertile valleys and uplands of Pennsylvania and Virginia at the western edge of European civilization. Along with established backwoodsmen several generations from the European homeland, some of these groups are recorded in history as having been fiercely independent, with an indifferent loyalty to the British crown.

In 1768, with the Proclamation Line barely five years old, the Iroquois, hoping to direct potential westward settlement into lands south of their Finger Lakes homeland, "sold" lands actually occupied by other Native tribes, west through West Virginia up to the Ohio River. Young Euro-American families, desperate for land to feed their growing families, poured across the Line in the "First Crossing." In the next few years, the Cherokee sold much of what is now Kentucky. People of the Second Crossing, 1775, streamed through the Cumberland Gap to find Kentucky farmland as far west as the Falls of the Ohio (Louisville). These crossings into the land across the mountains were the embryonic birth of the legendary cross-country migrations to come. *Many of the earliest pioneers to settle in east-central Illinois 50 years after the Second Crossing came out of Kentucky by way of the Palestine (Illinois) Land Office and may well have been children or grandchildren of these indomitable, independent frontiersmen.*

In the time of the Crossings (and after), Native resistance to the loss of hunting habitat became as desperately intense as was the invader's drive for barn and pasture space for his livestock, as men of two food-production styles fought to feed their families by the survival techniques each knew best. Between 1765 (end of the French and Indian War) and 1795 (Treaty of Greenville), frontier husbandrymen and Native hunters became locked in the mutually murderous "Indian Wars." This was the fourth kind of warfare in the Northwest Territory, Native versus frontiersman, fought between small groups at the local level of the individual farmstead.

THE DIVERSE EURO-ORIGIN PEOPLES, now exerting population pressure westward from the eastern entry into this continent's corn-growing latitudes, were developing a new image of themselves: not as colonials or subjects or immigrants. Many of the poor families who kept, doggedly, replacing frontier families lost to Native attacks in lonely outpost farmyards at dawn, were loyal only to their fellow frontiersmen, banding together with them to make their own, pure, democratic rules. From east coast to frontier, then, people began to sense their new identity. They were Americans, and they fought the War of Independence, 1775–1780 (Treaty 1783), to prove it. This war was English-speaker versus English-speaker—coming full circle from the early Native-versus-Native wars here.

The New Americans cared little for the balanced accommodations of the century-and-a-half-old "Middle Ground" between White and Native trading partners. Frontier New Americans and local Native Americans became hated "others" to each other as the Native-versus-frontiersmen wars continued, with shocking cruelty on both sides. This desperate competition between hunter and husbandryman for land to feed their families in the manner each knew best is often, now, the only relationship between the races still remembered.

By the spring of 1785, 2,200 families already lived west of the Ohio River on lands not yet officially opened for settlement by the United States. By 1786, Indian terror raids on all the White American settlements west of the Appalachians were multiplying, as Natives frantically tried to stem the tide. In 1787, the Northwest Territory was defined in the Ordinance of that name, and, in 1788, this "Territory Northwest of the River Ohio" was provided with a Governor, who in that year established the first *legal* United States settlement west of the Ohio, Marietta, at the mouth of the Muskingum River into the Ohio—*one of the first substantive stepping stones toward eventual settlement of Illinois!*

The British still held Detroit and Fort Miami near the outlet of the Maumee River into Lake Erie. They maintained the old friendly trading relationship with Native harassers of the but-lately-British-subject nation, supplying Natives with gunpowder and other necessities. As Indian raids on farm families continued in intensity, President George Washington became determined to strike at the source of Native support by sending troops to take the Maumee River area and the fort still held by the British at its mouth. Two expeditions failed disastrously, to the glee of Native warriors who were doing the actual fighting. But the third expedition succeeded under the command of obsessively methodical General "Mad Anthony" Wayne (for whom Ft. Wayne, Indiana, at the Maumee-Wabash portage, is named) at the Battle of Fallen Timbers, 1794. At the end of this battle, as retreating Indian warriors sought refuge in the British fort, the British avoided immediate confrontation with Wayne's army by closing the gates against the Native warriors who had been protecting them. This betrayal and the tragic realization by the Natives that they could no longer look to the British for help was the real reason that the Natives' will to resist was finally broken in the Northwest Territory.

It was in the following year that the chiefs of many nations, deciding to "deal," came to negotiate with the Americans in the Treaty of Greenville, 1795. With this treaty, "legal" purchases of Native land by the United States government commenced the extinguishment of *Indian* land claims—this time without war.

Seven years after Greenville, with the Kaskaskia Purchase of 1803, in which the first part of the area we call "east-central Illinois" was ceded to the United States to

be transformed into Public Land, the process of converting Illinois' glacial-loess soils, enriched by centuries of tall-grass prairie cover, into a world-class producer of staple crops had finally begun!

THE NATURAL SCENE

The Rivers of Mid-Continent

Just as *CLIMATE* has always been an inescapable determinant of *ecosystems*, so were *RIVERS* a determinant of *human activity* in the pre-industrial past. Civilizations were born along the banks of major rivers, especially near their joining with the sea. In mid-continent North America, the confluence of two substantial rivers developed, often, into a center of population, as human movement on or along the rivers converged from three directions. Major forts were built to monitor such river-and-population convergences. General Anthony Wayne's Fort Defiance, built at the center of the Native population that had collected around the Maumee-Auglaize confluence in the northwestern corner of Ohio, is one example. *The Piankeshaw and, later, Kickapoo villages at the joining of the Salt Fork and Middle Fork of the Vermilion River, and the Piankeshaw village at the mouth of the North Fork into the Big Vermilion (present-day Danville) are examples from the perimeter of the study area.*

In the low-differential elevations of the Lakes-Ohio-Mississippi triangle, tribes tended to claim territory in some natural relationship to rivers: the watershed on both sides of smaller rivers, or the watershed on one side of a major river. Much-used foot trails developed beside river courses *(in our area, just inside the riverside timbers to avoid biting flies on the open prairie!),* as well as along the ridges that separated rivers. Trails along the lines dividing continental watersheds were crossed at right angles by riverhead-to-riverhead portage trails, as described in "The Portage Connection" section of this book, the strategic crossroads often chosen for a major trading post (Hulbert).

Rivers, and other water features, as the most easily definable of all landmarks, developed naturally into legal boundaries (not requiring the surveyor's compass!). Our study area is located in the state with the largest proportion of riverine boundaries in the Union, a state that was part of the Old Northwest Territory, itself nearly entirely defined by rivers and lakes (see map, page 38). The Third Principal Meridian, which bisects our state from south to north, and which figures in about two-thirds of real estate descriptions in Illinois, was surveyed north from the confluence of the Ohio and the upper Mississippi Rivers at the toe of Illinois (once the meeting place of glacial meltwater torrents!).

The headwater prairie of east-central Illinois, by definition, has no significant river features, other than its location at the head of a fan of river sources. A traditional view suggests that our area may have been a rich, but usually seasonally exploited hunting ground, not always contested for tribal ownership. Family groups, normally headquartered on a major river such as the Kankakee (for example, the Potawatomi), may have come hunting into our area annually, returning over and over to favorite streamside campsites.

The "Grand Village of the Prairie Kickapoo" developed near the center of the headwaters at the top of our study area. One has to imagine some strategic advantage to a site from which travel, within the shady margin of river timbers, could be undertaken in almost any direction, along immutable landmark rivers.

The Bountiful Hunting Grounds

First settlers described the east-central Illinois prairie as criss-crossed in every direction with faint paths, from grove to grove, river timber to river timber—a full-size ground map recording the purposeful passage of animals and men.

Those first settlers' farmsteads, typically at the edge of sheltering timber, looked out onto an open-sky grassland, which was empty of the herds of large herbivores—the elk and the buffalo—that had grazed there when La Salle came to Illinois country a century and a half earlier. As one investigator phrased it, it was as though a "shock wave" preceded Euro-American settlement, diminishing the large-animal species. Elk had faded from our area by the early 1800s; buffalo a little earlier.

Climate may have played some part in the loss of the buffalo here. Normally, a dry grasslands species, drawn east of the Mississippi around 1400 AD by a hot, dry climate spell (a late echo of the Hypsithermal?), buffalo would have been a little out of their element in the subsequent tall-grass, wet prairie of Illinois. Around the middle of the Little Ice Age (1600–1900), as the oscillating thermal curve rebounded, many perished in the deep wet snows of several severe winters here. Settlers found huddled heaps of their bones out on the open prairie or in sheltered draws, like the one on the Boneyard Creek where it entered "Big Grove" at a site at the edge of present-day downtown Urbana, Champaign County.

In his 1673 diaries, as translated from the French, Father Marquette wrote of the Illinois River country:

> *"We have seen nothing like this river we enter as regards its fertility of soil, its prairie and woods; its cattle [buffalo], elk, deer, wildcats, bustards [prairie chickens?], swans, ducks, parroquets. . . ."* (Imagine the shaded recesses of the prairie groves and timbers of early Illinois accented not only by the flashing scarlet of the cardinal, but also with the brilliant green of flocking parakeets!)

George Croghan, quill pen, gall ink, and bound diary apparently packed along in the most trying of

wilderness travel situations, wrote (as nearly as his difficult handwriting can be interpreted) of his June 1765 passage, south to north, through the eastern edge of the Grand Prairie:

> *18th & 19th: We traveled thro a prodigious large Meadow called the Pyankeshaws hunting ground here is no wood to be seen and the Country appears like an Ocean the ground is exceedingly rich and partly overgrown with wild Hemp The Land well watered and full of Buffaloes Deer Bears and all Kind of Wild Game.*
>
> *20th & 21st: We passed some very large Meadows part of which belong to the Pyankeshaws on the Vermilion River the Country and Soil much the same as that we traveled over for these three Days past wild Hemp grows here in abundance the Game very plenty at any Time in Halfe an Hour we could Kill as much as we wanted.*

[This early leg of Croghan's 1765 trip to find Pontiac was the backtracking loop forced upon him by wayward Kickapoo, as related earlier.]

Sixty years after the Croghan passage, on the eve of settlement, and four years *after* the as-yet-invisible, rectangular dividing of our lands by the government surveyors, Chester A. Loomis wrote his June 27, 1825, observations of the eastern part of our area:

> *The Vermilion river is a beautiful stream of clear water. It takes its rise in the "Grand Prairie," and running a south-easterly course for 40 or 50 miles, falls into the Wabash . . . Fish in great numbers are every where swimming in its waters. Some of them of 15 or 20 pounds weight . . ."*

(A stretch of the Middle Fork of the Vermilion River was dedicated as a National Scenic River in 1990. Fishermen regularly take fish from its waters, but needless to say, none of their catch now approaches the 15 or 20 pound weight of the Big Vermilion River fish of wilderness times!)

Loomis continues, *". . . Game is abundant, The forests are filled with deer, and the prairies with turkeys and prairie hens; prairie wolves and opossums are numerous. Of reptiles, they have rattle snakes . . . , black snakes, copper-heads . . ."*

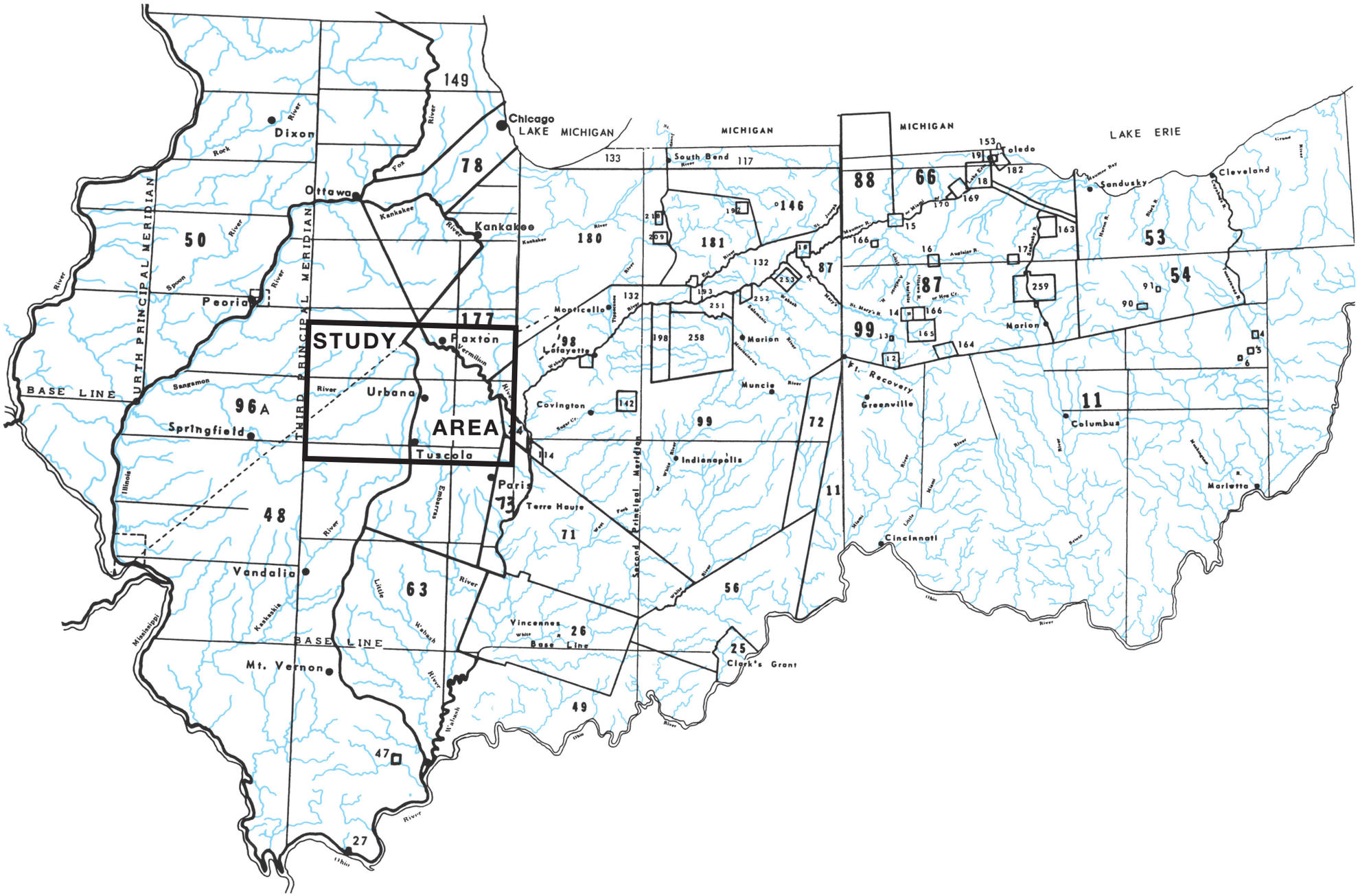
At settlement, the largest animal species continuing to survive in numbers in our area was the ubiquitous white-tailed deer of the forest—mainstay of the Middle Archaic Indian 5000 years earlier—and a predator, the wolf, of which there were two species here, the "black" wolf, as pioneers called it, and the smaller, slightly reddish prairie wolf. *The wolf is gone now, but the familiar whitetailed deer (predator-less) still thrives, survivor of millennia co-existing with the human race here—not to mention the seldom-seen, nocturnal opossum, which lives under many an old-fashioned porch in the older sections of our towns! And the raccoon, upsetting urban garbage cans a few hours before dawn!*

At the signing of the last Indian cession treaty releasing our area for conversion into privately-owned farmland (1819), the land here was no longer the sort of rich hunting ground that Marquette and, later, Croghan had marveled at. But for the next three or four decades the prairie flora remained virginal. Until the coming of the railroads and the cultivation of the prairie, pioneer children picked bouquets for their mothers of the same colorful or curious prairie flowers, many now rare, among which pre-Columbian youngsters had played for centuries.

Ratibida pinnata, Yellow Cone Flower

The Royce Areas with Unique Identifying Numbers

Rivers are added to show nature of landscape within Royce Areas.



Map from Joe D. Webber, Indian Cessions Within Northwest Territory *(1797), as adapted from the* Royce Report *(1896-1897), which interpreted Treaties recorded in* United States Statutes at Large, *Vol. VII.*

INDIAN LAND CESSIONS: Tribal Territories Transformed into U.S. Public Domain

Until an 1871 Act of Congress finally ended the characterization of tribal entities as European-style nationalities, the United States, in a series of formally composed treaties-of-purchase, fabricated for itself "legal" titles to territories claimed by any and all, sometime, tribal occupants. These documents, until 1871, had treated even the smallest remnants of tribes as ceremoniously as they would have treated any foreign nation (Royce Report).

This series of treaties may be viewed as the first—or the prerequisite—step in transforming dominion of these lands from the fluid, competitive-between-groups, territorialist system practiced by early, semi-nomadic tribal hunters worldwide, into the settled, private-ownership, legal-title system invented by organized, national governments to promote civil harmony (thus "civil"ization) and stable agricultural productivity within their borders.

Summaries of "the Indian Land Cessions," chronologically ordered, may be found in Part 2 of the 18th Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution (1896–1897). This comprehensive report, compiled by Charles C. Royce, assigns unique, chronologically-ordered numbers to the ceded tracts of land, which became known, by number, as "the Royce areas" (opposite). A long discussion of the legal tangle in justifying and obtaining title from the Indians, written by archaeologist Cyrus Thomas, introduces the Cession summaries, which are followed by a collection of state-by-state maps. Full copies of the actual treaties for the 1795 Greenville Treaty area itself may be found in the United States Statutes At Large, Vol. VII.

CONCEPT OF INDIAN TERRITORIAL BOUNDARY, 1763–1803

As we have seen, the Treaty of Paris (February 1763) affirmed British takeover from the defeated French of *Dominion* over lands between the Appalachians and the Mississippi River—the former New France. Later the same year, the British Proclamation of 1763 acknowledged Native claims to the same area by "Reserving" it "for the Indians." *(The Proclamation prohibited White settlement west of the Appalachian Mountains until treaties had been negotiated with the Indians.)*

We here define the 1763 British Proclamation Line as The First (formal) Indian Territorial Boundary in the Northeast arena (of the future United States).

Thus was planted the seed of an unprecedented legal ambiguity, later inherited by the youthful United States, in which Euro-American governments could claim dominion rights over territory to which they could gain TITLE (Western-style, legal) only by treaties-of-purchase with willing representatives of the Native occupants, current or one-time, who were simultaneously claiming the land.

The Proclamation of 1763 set another precedent. Private transactions with Natives were forbidden; purchases of Native land were to be made only by the government, which then managed the sales to private citizens that created private property.

The way that the United States Land Office later measured and defined the Public Domain, prior to Sales, is discussed in Part 3 of this volume.

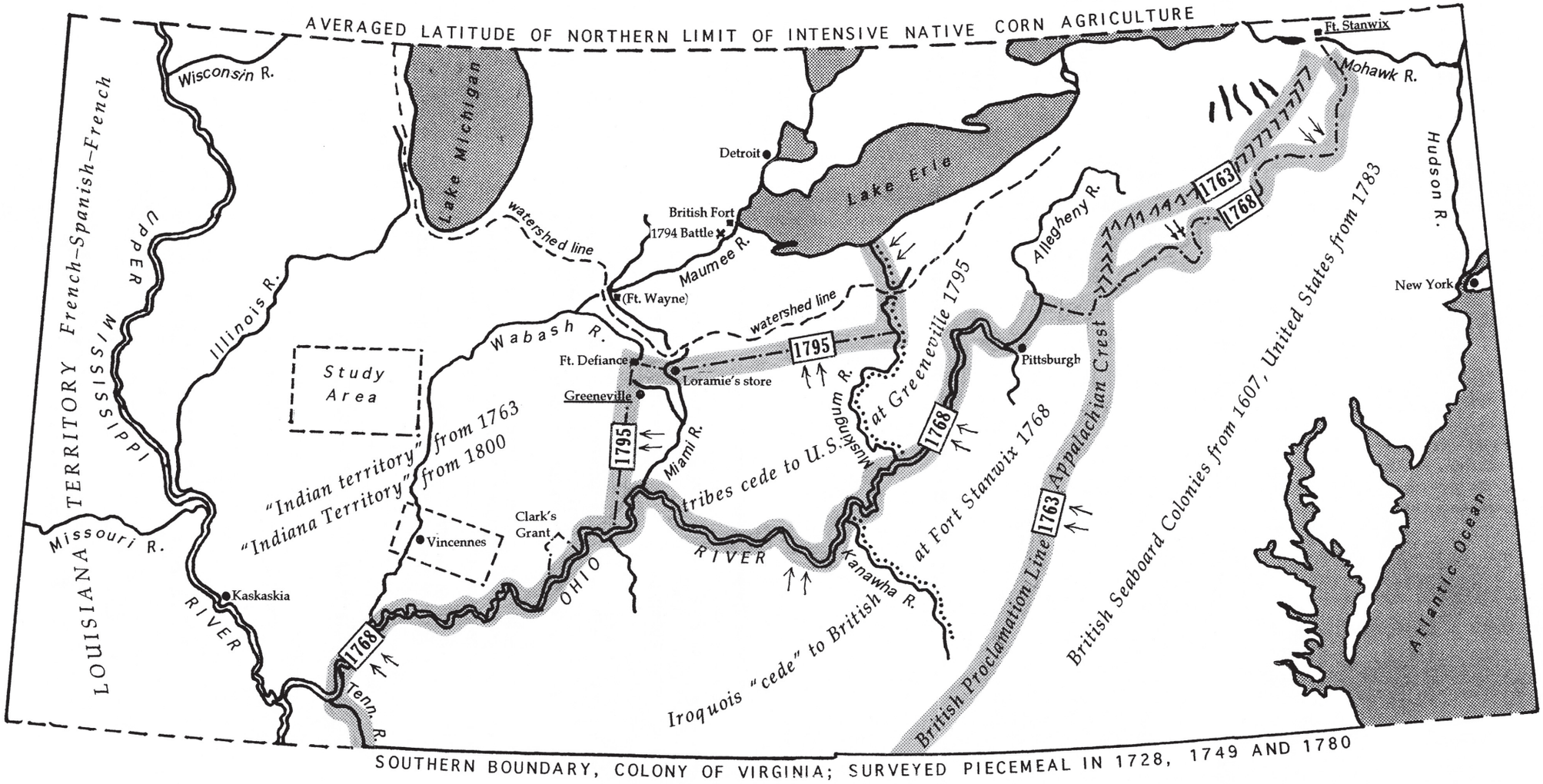
Within a few years, a flood of poor White squatters was violating the Line, planting their subsistence crops on the west side of the mountains, straining the practicality of the British Proclamation Line of 1763. The Ohio River was soon seen as a more viable dividing line between the two populations—those relying on the hunt, and those in control of their animal resources, both for product and for supplementary labor—the huntsmen and the husbandrymen.

Several minor treaties ventured to push the territorial line even further: across the Ohio River and westward to the banks of the canoe artery of eastern Ohio—the portage-connected rivers of Cuyahoga and Tuscarawas into the Muskingum—a major travel route between Lake Erie and the Ohio River. In practice, rank-and-file Natives of the area indignantly rejected this incursion across the river with the motto, "No white man shall plant corn across the Ohio River" (Hulbert, vol. 8).

In the lands south of the Ohio River, the Board of Trade of Great Britain at first favored the Kanawha River, a northwest-flowing tributary of the Ohio River, as the western limit of White settler expansion. But, with the signing of the Treaty of Fort Stanwix in 1768, the Six Nations of the Iroquois sold and ceded lands south of the Ohio (claimed by, but not occupied by, them) extending westward all the way to the Tennessee River, the last southern tributary flowing north into the Ohio before its confluence with the Mississippi, lands that included nearly all of present-day Kentucky. (With this magnanimous, but well-paid, cession of lands not occupied by them, the Iroquois Confederation also regained a strip of their former territory *east* of the Proclamation Line.) With the 1768 Treaty, virtually the full length of the Ohio River then in effect served as, what we here name, The Second Indian Territorial Boundary in the Northeast arena (of the future United States).

With the successful conclusion of the American Revolution, the new United States thus acquired not only dominion claims, but presumed legal title to Kentucky soon after permanent White settlement had begun there in 1774 to 1775, following defeat of Shawnee by Virginians in the short "Lord Dunmore's War." Statehood was achieved by Kentucky in 1792, but backwoods Kentucky families had long paid their own price for their land in lives lost when bona-fide resident Natives not represented at the Fort Stanwix Treaty signing resisted the invaders desperately in the mutually murderous "Frontier Indian Wars."

Indian Territorial Boundaries, 1763–1800



The Ohio River, as Indian Territorial Boundary, proved no more impermeable to population pressures from the east than had the mountain watershed line. Exerting a kind of osmotic pressure on the river boundary, landless young White fathers with families to feed risked the illegal, dangerous move and brought their families across the river.

The Shawnee and others resisted this farmer invasion using the small-scale terrorist tactics of the indigenous cultures—dawn massacres of isolated farm families—but, gradually, Indian villages began to retreat northwestward, step-by-step, toward the canoe artery of the Maumee River, and protection of the outpost British fort near its mouth. There, the Ohio River Indians, and the Lake tribes—Miami, Potawatomi, Ottawa, and others—coalesced into a loose confederation aimed at saving the Native hunting habitat from destruction by the invading, ever-multiplying ploughmen/husbandrymen out of the east.

Meanwhile, in 1785, disregarding elaborately composed treaties and a professed Indian Territorial Boundary, the Continental Congress of the young United States matter-of-factly enacted "An Ordinance for ascertaining the mode of disposing of Lands in the Western Territory"—the Land Ordinance of 1785—authored by Thomas Jefferson, who devised detailed instructions to surveyors for converting wilderness landscape into privately-ownable real estate. (See Part 3 of this volume.) Two years later, the Northwest Ordinance, "An Ordinance for the government of the Territory of the United States northwest of the River Ohio" (thus the "Northwest Territory") was adopted by Congress.

The disparity of intentions, at that time, between coexisting Indian Treaties and Congressional Ordinances of the United States disheartens logical discussion.

Nevertheless, when a Treaty of Peace was signed at Greenville (Ohio) in 1795, wrapping up General Anthony Wayne's defeat of the Indian confederation along the Maumee and the even more decisive shattering of Native ties to the arms-supplying British at the 1794 Battle of Fallen Timbers, an Indian Territorial Boundary was again designated by treaty.

Intentions . . .

". . . The utmost good faith shall always be observed towards the Indians; their lands and property shall never be taken from them without their consent; and, in their property, rights, and liberty, they shall never be invaded or disturbed, unless in just and lawful wars authorized by Congress; but laws founded in justice and humanity, shall from time to time be made for preventing wrongs being done to them, and for preserving peace and friendship with them."

(Excerpt from Article 3 of the Northwest Ordinance, enacted July 13, 1787)

This, the Third Indian Territorial Boundary, permanently crossing the Ohio River at last, opened to legal White settlement a huge L-shaped chunk out of future Ohio, including more than its south half—the area across the Ohio River already illegally occupied by so many White families—and the lake-bordered eastern quarter of the northern strip. The westernmost limit took a thin wedge out of future Indiana ("the Gore").

The ambivalent concept of an Indian Territorial Boundary finally passed into history a mere eight years after the Treaty of Greenville, when, in 1803, the United States Government purchased a large, discrete, triangular tract of South-Central Illinois (including part of the study area) from a small remnant of the Illinois Nation.

THE TREATY OF GREENVILLE, 1795

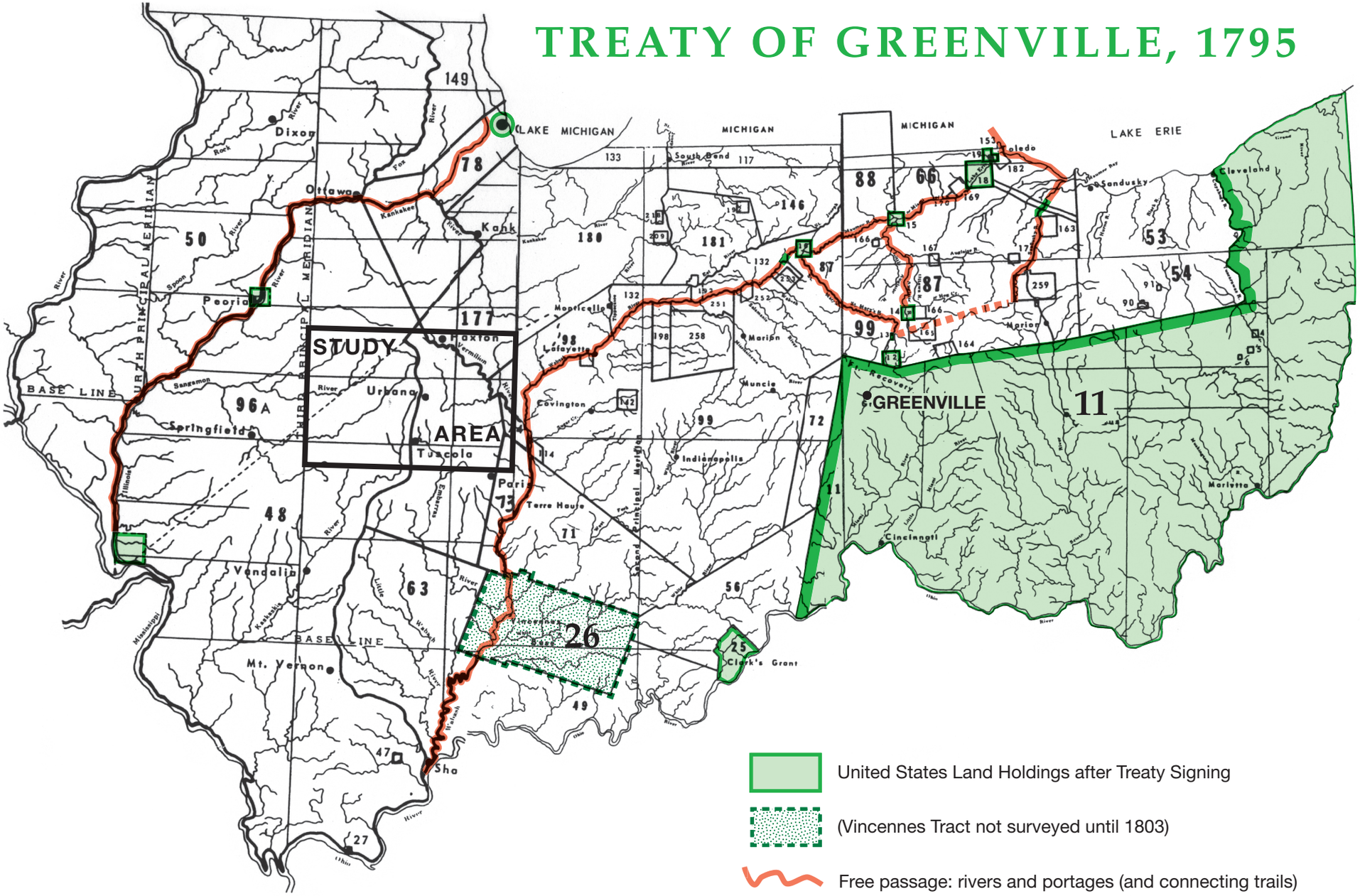
". . . Indian lands northward of the river Ohio, eastward of the Mississippi, and westward and southward of the Great Lakes and the waters uniting them . . ."

The 1795 Treaty of Greenville obtained for the United States a major portion of present-day Ohio, unmolested travel rights along canoe routes and connecting overland trails through the treaty area (above, the equivalent of the Northwest Territory), the long-established sites of Detroit and Michillimackinac, and tracts of land between two and twelve miles square in area around fourteen significant river and travel sites (at portages, lake landings, confluences, villages, and old fort sites). In exchange, the United States promised that they would deliver to "the Tribes of Indians, called Wyandots, Delawares, Shawanoes, Ottawas, Chipewas, Putawatimes, Miamis, Eel-river, Weas, Kickapoos, Piankashaws, and Kaskaskias," collectively, "a quantity of goods to the value of twenty thousand dollars . . . and henceforward every year forever . . . like [similar] useful goods . . . of the value of nine thousand five hundred dollars" ($1,000 annually to the first seven tribes listed above and $500 annually to the remaining five tribes). And if, "at an annual delivery . . . [they] desire that a part of their annuity should be furnished in domestic animals, implements of husbandry, and other utensils convenient for them . . . the same shall . . . be furnished accordingly."

Distribution of annuities—the annual dispensing of European-made goods to Native allies—was a long-established custom in the pre-Revolution, Euro–Native relationship. We know that the annuities listed in the 1795 Treaty of Greenville were still being actively distributed eight years later at the 1803 signing of the Kaskaskia Treaty (with which the United States gained part of the study area), because at that time the annuity in trade goods to the remnant Kaskaskia tribe was increased from $500, as had been specified at Greenville, to $1,000.

We note also that the writers of this treaty seemed hopeful that the Natives involved might take some of their annuities in domestic animals and implements of husbandry (encouraging them to develop an independent subsistence at the lower level of land-per-person that sufficed the Euro-American husbandryman?).

TREATY OF GREENVILLE, 1795



Base Map from Joe D. Webber, Indian Cessions Within Northwest Territory *(1797), as adapted from the* Royce Report *(1896-1897), which interpreted Treaties recorded in* United States Statutes at Large, *Vol. VII.*

In the 1795 Treaty of Greenville, the United States unequivocally relinquished its own claims *"to all other Indian lands"* in the treaty area. Article VI of the Treaty even goes on to state:

> *If any citizen of the United States, or any other white person or persons, shall presume to settle upon lands now relinquished by the United States, each citizen or other person shall be out of the protection of the United States; and the Indian tribe, on whose land the settlement shall be made, may drive off the settler, or punish him in such manner as they shall think fit; and because such settlements made without the consent of the United States, will be injurious to them as well as to the Indians, the United States shall be at liberty to break them up, and remove and punish the settlers as they shall think proper, and so effect that protection of the Indian lands herein before stipulated.*

The Treaty continues with Article VII:

> *The said tribes of Indians, parties to this treaty, shall be at liberty to hunt within the territory and lands which they have now ceded to the United States, without hindrance or molestation, so long as they demean themselves peaceably, and offer no injury to the people of the United States.*

The 1795 Indian Territorial Boundary in Ohio was generally accepted at the time, as demonstrated by the 1796 Map of Northeastern Ohio produced by Moravian missionary-minister John Heckwelder, upon which he clearly labels as "Indian country" the region northwest of what he calls "the Territorial Line between the Ind. & the United States."

One speculates, though, about the authors of this "Treaty of Peace." Were the treaty-making Americans sincere at the time of the treaty's composition, ignorant of, or choosing to ignore, preparations being made in another branch of the federal government for eventual total takeover of the region by the New Americans? Most historians agree that U.S. officials at the time probably assumed that, in the long run, these boundaries would not be permanent.

The large tract of future Ohio, gained by the United States for its citizens in the 1795 Treaty of Greenville, included all the unglaciated, thus more deeply eroded, land of southeastern Ohio, along with the western rim of the Appalachian Plateau, extending west out of West Virginia, a bedrock-evident landscape type already familiar to the earliest White settlers westward across the legendary Ohio.

THE KASKASKIA PURCHASE, 1803

No further negotiations for lands "northwest of the River Ohio" ensued during the first eight years (1795–1803) following the signing of a "Treaty of Peace" at Greenville.

Disheartened Natives of the area virtually ceased harassing the White settlers who had been streaming across the Ohio River to clear stock-and-crop farms in the heart of the prime hunting forests of present-day Ohio (just as earlier settlers had been doing, with questionable legality, for at least a decade before Greenville).

On February 20, 1796, six-and-one-half months after Greenville, the first United States Land Patent for a tract of land in the Virginia Military District (an area—bounded by the Ohio, Little Miami, and Scioto Rivers—reserved for purchase in exchange for the military bounty warrants awarded as partial pay to soldiers of the American Revolution) was issued to its first legal owner—an example of the procedure in but one of the hodgepodge of Land Districts into which the future State of Ohio came to be divided.

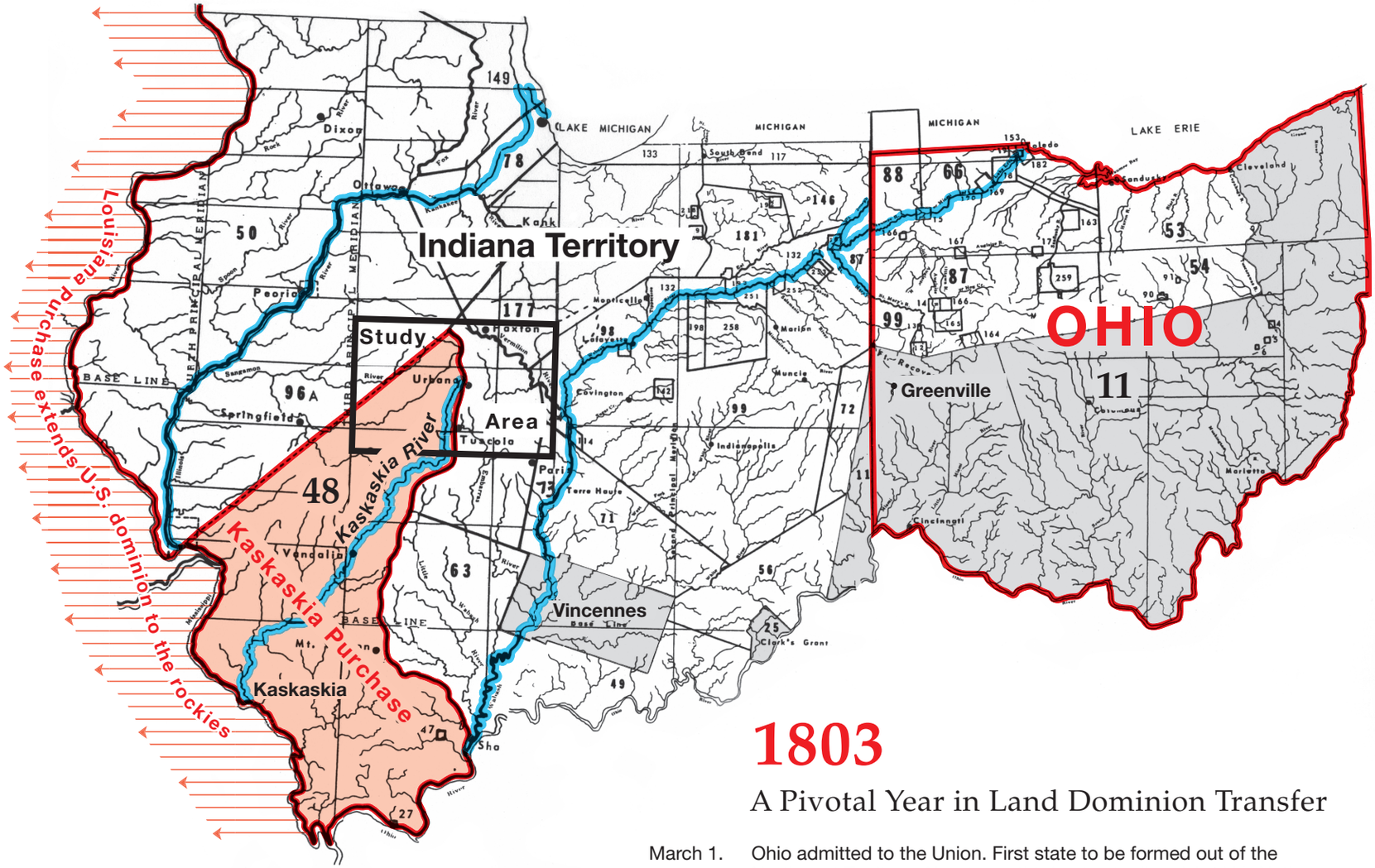
In May of 1800, Congress settled down to formal business and established four standard Federal Land Offices to serve settlers seeking legal title to lands that had been ceded to the United States at Greenville nearly five years earlier. Three were situated at points of entry into the ceded lands: at Steubenville, Marietta, and Cincinnati, spaced along the Ohio River water-travel route. The fourth, at Chilicothe, lay on the west bank of the Scioto River—a canoeable tributary of the Ohio—at the eastern edge of the Virginia Military Tract. The Steubenville Land Office, an early stop on the float down the Ohio from Pittsburgh, was the first of the four to set up operations—on May 10, 1800. The Marietta Land Office, downstream, opened later the same year, Chillicothe and Cincinnati, the following year.

Land sales accumulated rapidly. On March 1, 1803, less than eight years after the signing of the Greenville Treaty, the proposed state of Ohio had fulfilled population requirements for statehood, and was admitted to the Union, the first state to be formed out of the lands "northwest of the River Ohio."

Up to this point, land cession activity had pressed step-by-step westward, from the Appalachian crest, to the Ohio River, and across the river. But in 1803, this logical land-purchase pattern was disrupted, skipping over Indiana and Illinois, all the way to the Mississippi River (which had been, until that time, the limit of potential British or American expansion), and beyond. On April 30, 1803, an agreement was reached in Paris, in which France sold its (hard-to-administer) "Louisiana Territory," stretching from the Mississippi, west to the Rockies—actually, the entire west-of-the-Mississippi half of the Great Central Basin—to the 20-year-old United States government. (Congress approved the transaction on October 20.)

The mold had been broken. On August 13, 1803, at Vincennes on the Wabash, William Henry Harrison, governor of Indiana Territory (all of the old Northwest Territory west of the state of Ohio) assembled five representatives of the remnant Illinois Nation—three Kaskaskia, one Michigamea, one Cahokia, all consolidated under the Kaskaskia name—to negotiate a purchase/cession treaty.

The Kaskaskia Purchase of 1803 awarded presumed legal title to the United States of the entire Kaskaskia River basin (the historic French-founded river town of Kaskaskia occupied the delta at the mouth of the Kaskaskia into the Mississippi), along with the adjoining



1803

A Pivotal Year in Land Dominion Transfer

March 1. Ohio admitted to the Union. First state to be formed out of the Northwest Territory. About one-third not yet relinquished by Native inhabitants.

April 30. Louisiana Purchase agreement reached in Paris, transferring from France to the U.S. a large expanse of land, from the Mississippi River to the Rockies. Approved by Congress on October 20.

August 13. Kaskaskia Purchase treaty signed at Vincennes by Territorial Governor W. H. Harrison, 3 Kaskaskia, 1 Michigamea, and 1 Cahokia. First NW Territory land adjoining the Mississippi to be ceded to the U.S. by Natives. First major land cession in future state of Illinois. (Number 48 in the Royce System)

Land ceded to the U.S. by 1795 Treaty of Greenville, 8 yrs. earlier

Base Map from Joe D. Webber, Indian Cessions Within Northwest Territory *(1797), as adapted from the* Royce Report *(1896-1897), which interpreted Treaties recorded in* United States Statutes at Large, *Vol. VII.*

small river basins around the toe of Illinois, eastward up to but excluding the Wabash River watershed. An unsurveyed straight line, directed from the head of the Kaskaskia River watershed in future Champaign County, southwest to the mouth of the Illinois River where it empties into the Mississippi River north of St. Louis, was designated as the cession's northwest boundary. The Native signers reserved, for continuing tribal occupation, two tracts of land within the cession.

Although survivors of the Illinois Nation by that time lived mostly in the lower Kaskaskia River valley, there is no doubt that tribes of the Illinois had indeed been the last exclusive occupiers of the ceded land, which was part of their older, larger domain, once stretching north to Lake Michigan and west across the Mississippi. The cession proved legitimate enough to encourage the beginning of government surveys only two years later, in 1805, when the "fundamental east-west base line," staked but not measured, was run straight west across the toe of Illinois from the Wabash River to the mouth of the Kaskaskia River near the town of Kaskaskia (see Part 3).

The breakthrough Kaskaskia Purchase—the first cession northwest of the Ohio since Greenville, the first bordered by the Mississippi River, the first in "Indiana Territory," the first in the future state of Illinois—came to its northern apex in our area of study, dividing the present city of Champaign at the watershed line between the Kaskaskia River basin and the Vermilion-Wabash River basin. The sites of modern-day east Champaign and the city of Urbana remained under nominal Kickapoo dominion for another 13 years. (Boundaries of the "Vincennes Tract," only vaguely defined in the 1795 Treaty of Greenville, were not actually finalized until that same year of 1803.)

Fifteen years after the pivotal year of 1803, the state of Illinois was admitted to the Union. Another fifteen years passed before all Indian claims to lands in Illinois had been "extinguished" (1833), but, with the historic Kaskaskia Purchase of 1803, the ultimate conclusion became foregone.

TRIBES CEDING LANDS IN THE STUDY AREA, 1803–1819

Remnant Illinois, living far southwestward in the neighborhood of the Kaskaskia–Mississippi confluence, and study-area-resident Kickapoo tribes, were the major claimant/ceders in the study area from 1803 to 1819. Additionally, the lower Great Lakes–based Potawatomi pressed claims into the northwest corner and eastern edge of the study area, while Miami-related tribes, including Eel River Miami and Wea, along with Delaware, claimed a strip of future Illinois west of the Wabash. The latter was ceded to the United States on September 30, 1809, in the "Fort Wayne Treaty." Part of the boundary of this often-called "Harrison Purchase" is still evident in our area as a double jog in Vermilion County's south boundary line.

Surprisingly, the Piankeshaw tribe claimed no land in our study area. Piankeshaw occupation of the Big Vermilion area, from the salt springs downstream to the confluence with the Wabash in present-day Indiana, did not end until the mid-1790s, when the diminished tribe moved southward to join brother tribe members in an area west of the Vincennes Tract, land that they sold in 1805, barely ahead of the government surveyors.

Nation of the Illinois

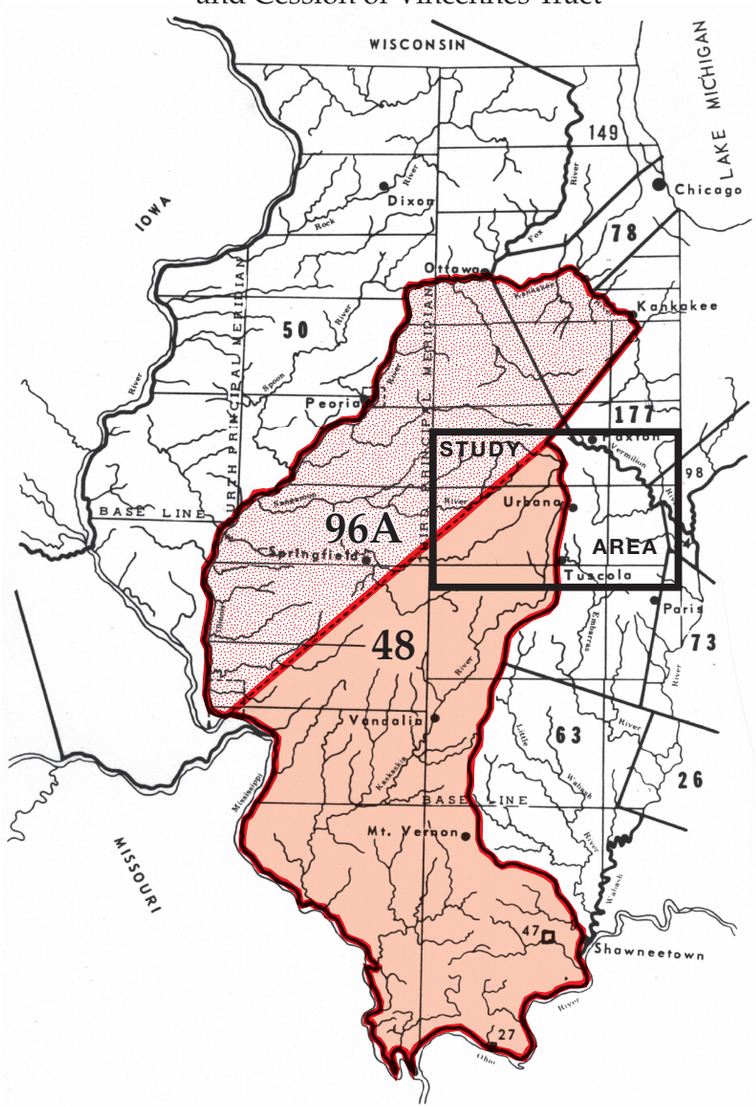
Tribes of the Illinois Nation (or Confederation) were part of the trans-Appalachian, Algonquia language and culture complex, occupying the northeast quadrant of the Central Basin of the North American continent as recorded history begins in that region. Major tribal groups are known as the Kaskaskia, Cahokia, Tamaroa, Peoria, and Michigamea. The latter tribe originally hunted west of the Mississippi but, when driven east of the river by hostile Sioux, was adopted into the Illinois Confederation. At the height of Illinois influence, the Land of the Illinois included most of our present state of Illinois, excluding any part of the Wabash River watershed bordering it on the east (the domain of Miami-related tribes). Favored village sites of the early Illinois overlooked the Illinois River and two northern branches, the Des Plaines River (called the Maple River in early treaties) and the Kankakee River.

Historical fact seems to imply that the Illinois may have been less effective warriors than their neighbors to the east, west, and north. For the last half of the 1600s, the Iroquois, hungry for trading furs, invaded out of the northeast, mercilessly slaughtering the Illinois and significantly reducing their numbers. The Dakota Sioux badgered them from the west; while deadly persecution by a confederation of Sac, Fox, Potawatomi, and Kickapoo (fellow Algonquians) funneled the Illinois southward along the Kaskaskia River, toward its confluence with the Mississippi in southern Illinois. The lower Kaskaskia River valley, within a protective French zone, became the last stand for the harried Illinois Nation.

When LaSalle proclaimed the northeast basin area to be part of "New France" (1682), the Illinois had welcomed French friendship and protection. Conversion to Christianity and racial intermarriage had become commonplace. But Illinois Confederation numbers continued to wane, from battle losses, from introduced Old World diseases, and from alcoholism, which is believed to have been a particular problem for the Illinois (and from Church-enforced monogamy for the war-decimated warrior gender?). Warriors of the Illinois fought and died beside the French in the losing conflict with the British in the late 1750s (the British-named "French and Indian War," by which the British gained dominion of French lands up to the Mississippi).

Estimates place population of the Confederation of the Illinois at about 6,000 in 1700, and only 2,200 in 1768 (Tanner). In 1784, battle-capable warriors are thought to have numbered about 1,200. By 1800, William Henry Harrison, taking office as first governor of the newly designated "Indiana Territory," counted but thirty Illinois Confederation warriors remaining—twenty-five Kaskaskia, four Peoria, one Michigamea—on the eve of the 1803 Kaskaskia Purchase Treaty (Beckwith).

Cessions by ILLINOIS NATION
(exclusive signers)
participated, with others, at Treaty of Greenville
and Cession of Vincennes Tract



48	August 13, 1803	Treaty with "the Kaskaskia Tribe of Indians" (signers: 3 Kaskaskia, 1 Michigamea, 1 Cahokia)
96A	September 25, 1818	Peoria of the Illinois sell their interest in 48, plus 96A. The Kaskaskia, Michigamea, Cahokia, and Tamaron add 96A to previously ceded 48.

Base Map from Joe D. Webber, Indian Cessions Within Northwest Territory *(1797), as adapted from the* Royce Report *(1896-1897), which interpreted Treaties recorded in* United States Statutes at Large, *Vol. VII.*

Curiously, of the five Native signers of the 1803 "Treaty Between the United States and the Kaskaskia Tribe of Indians," the three nominal Kaskaskia bore names evidencing close affinity to Euro-Americans—Jean Baptiste Ducoigne (the notably pro-American chief of the Kaskaskia), Pedagogue, and Nicolas.

On the day that Illinois achieved statehood, April 4, 1818, appreciable areas of the new state remained unrelinquished by Natives. In August, later that year, representatives of a full slate of the Illinois Nation tribes (in order of signing: Peoria, Kaskaskia, Michigamea, Cahokia, and Tamaroa) hastened to assemble at Edwardsville to negotiate a final definitive treaty, selling off all of their land claims (most of which they no longer occupied) to the United States government. The Peoria, who were unrepresented in 1803, pointed out that they were as fully deserving of compensation for their former territory as the 1803 signers. With the 1818 treaty, then, the Peoria sold their claim to the original Kaskaskia Purchase land, but enlarged it northwestward, up to the banks of the Illinois River. The other four tribes affirmed the larger area.

In contrast to the mere five signers of the 1803 Kaskaskia Purchase, twenty-five signatures (or marks) verified the 1818 post-statehood treaty. *(One Kaskaskia—succeeding his father, Jean Baptiste Ducoigne, an 1803 signer, as chief—signed as Louis Jefferson Decouagne, a fine blend of loyalties.)* Although, in retrospect, the 1803 cession to the United States (by only five signers for the entire Kaskaskia River basin and the toe of Illinois) seems of flimsy legality, government land surveyors had, by the time of the 1818 treaty, already transformed about the southern two-thirds of the 1803 Purchase land into systematically surveyed and marked real estate, legitimizing the Purchase—in the field.

As late as 1830, a few Illinois Nation villages of Kaskaskia and Peoria persisted locally in the neighborhoods of the old French river towns, Kaskaskia and Ste. Genevieve. But, by 1832 (perhaps hastened by American reaction to the last Northwest Territory Indian resistance, the

Blackhawk War) these populations, also, had migrated westward. In northeast Oklahoma, the remnant Illinois (Kaskaskia and Peoria), in confederation with remnant Wea and Piankeshaw (Miami-related), are now designated as "Peoria and confederated tribes" (with a website: www.peoriatribe.com!). It is unlikely that a full-blooded descendant of any one of the separate tribes of the once-great Illinois Nation exists. Certainly, genes from early French–Illinois intermarriages are blended into the great mixed gene pool of melting pot America, though.

In retrospect, were the Illinois the victims of deadly intertribal persecution, followed by failure to successfully adapt their lifestyles to those of the Euro-origin invaders, among whom they had sought refuge and protection?

Tribes of the Kickapoo

The other major claimant of the east-central Illinois region, the Kickapoo—clearly antithetic to the Illinois Nation—did not agree to sell/cede the major part of their lands to the United States until 1819, by which time their territory was part of the new state of Illinois. *(As with the initial Illinois Nation cession in 1803, the Kickapoo cession of 1819 preceded by only two survey seasons the arrival of government surveyors in the lands that they had been inhabiting.)*

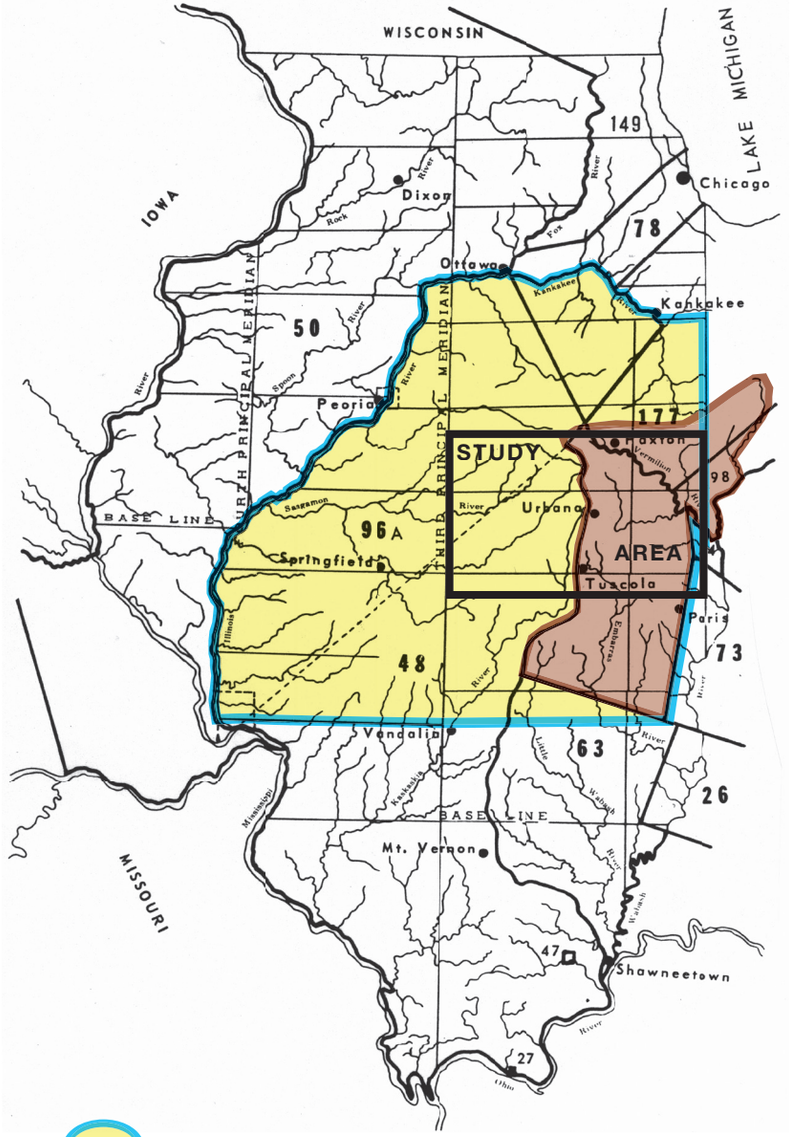
While the Illinois are thought to have been indifferent warriors, the Kickapoo were known as war-like, particularly skilled at roving, small-band attacks (like the one that interrupted George Croghan's 1765 expedition to find Pontiac).

The Illinois were pro-French, Catholicized partners in trade and in occasional traditional marriage with the French. When the "War between the English Speakers" (the American Revolution) commenced, the Illinois joined the French in siding with the New Americans. By contrast, the Kickapoo are characterized as having been aloof, independent, anti-White to the point of trading through intermediaries, and so strongly anti-American that they felt forced to side with the British during the War of 1812.

Cessions by KICKAPOO

(exclusive signers)

participated, with others, at 1795 Treaty of Greenville,
1803 Vincennes Tract, 1809 Harrison Purchase (73), 1809 & 1819 with Wea (74)



Base Map from Joe D. Webber, Indian Cessions Within Northwest Territory (1797), *as adapted from the* Royce Report (1896-1897), which interpreted Treaties recorded in United States Statutes at Large, *Vol. VII.*

FIRST OBSERVED FOR THE WRITTEN RECORD as tribal groups occupying the "thumb" of present-day Michigan west of lower Lake Huron, Kickapoo people, in the second half of the 1600s, joined the many other tribes who were taking refuge from the powerful, rampaging Iroquois, "behind" (west of) Lake Michigan. During the refugee interval, as Kickapoo mingled in often mixed-tribe villages, from Green Bay west to the upper Mississippi, they strengthened ties with their near-kin, the Sauk and the Fox, through intermarriage.

After the Grand Settlement of 1701 had confirmed retreat of the Iroquois eastward to their homelands, the French (in 1710) invited former refugee Algonquian groups, including Kickapoo, to move eastward and occupy the region west of the newly established Detroit, in order to serve as a buffer against possible Iroquois resurgence. The plan backfired, triggering intertribal hostilities known as "the Fox Wars" *(toward the end of which a decisive battle was fought in the study area, in present-day McLean County).*

Tending always to be wary of Whites, militant bands of Kickapoo then began drifting southward out of the refugee centers of Wisconsin, dividing, functionally, into two groups. Some bands later to be perceived as Prairie Kickapoo were concentrating by 1768 in northern Illinois, north of the Sangamon/Salt Creek combined watercourse, while others whom we perceive as River Kickapoo, including Kickapoo of the Vermilion, established villages along the Wabash River, from Ouiatenon (near present-day Lafayette, Indiana) to Terre Haute, with sites in between near the mouth of the Vermilion River into the Wabash.

Joined by Sauk, Fox, and Potawatomi, Kickapoo of northern Illinois "made a common cause of warfare against the tribes of the Illinois" (Beckwith), an activity in which the River Kickapoo were not involved, as their space did not particularly overlap with the Illinois.

Prairie Kickapoo settled into the abandoned headwater prairie lands, common source of the Sangamon, the Kaskaskia, the Embarras, and of the two Vermilion rivers, one flowing north into the Illinois River, the other southeast into the Wabash. (This occupation was the basis of Kickapoo land claims to the area in the first of the two Kickapoo Treaties of 1819.)

In the mid-1790s, river-based Kickapoo moved westward into lands vacated by the Piankeshaw along the Big Vermilion *(near the Salt Springs in the study area),* remaining there for about 25 years, until they sold the area to the United States in the 1819 Treaty.

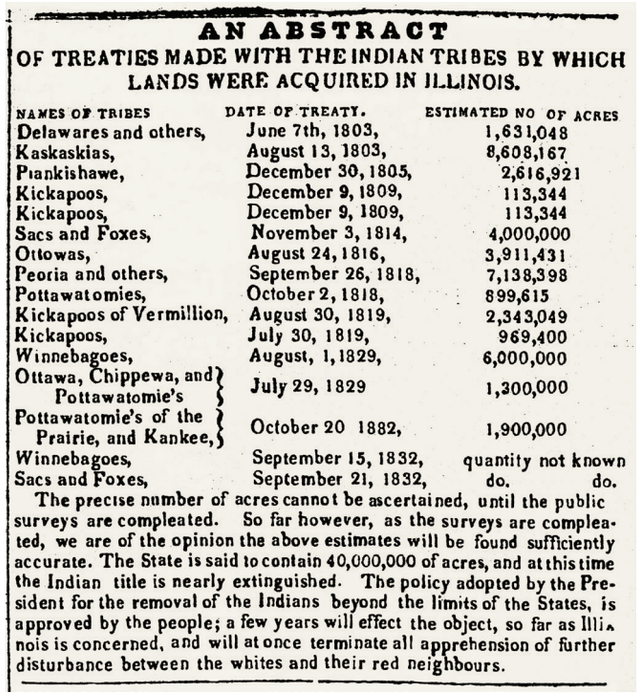
NATIVE POPULATIONS of the Lakes/Ohio/upper Mississippi region were thoroughly alarmed by the momentous purchases of 1803—the Louisiana Purchase and the Kaskaskia Purchase. As in a previous time of great change—the British takeover of New France in the 1760s—Native prophets/leaders emerged.

Beginning in 1805, in the years leading up to the War of 1812, two Shawnee brothers, one a spiritual visionary ("the Prophet"), the other, an effective leader and warrior (Tecumseh), traveled throughout the Ohio/Lakes region (and southward) crusading, in effect, for creation of an Indian nation of united tribes—comparable and equal to the White nation of the United States—which would block further White expansion into Indian lands and permit Indians to live in their own way. *Bands of the Kickapoo readily joined this crusade against U.S. expansion.*

The effort at first had no relationship to the brewing War of 1812, except that both the Native confederation and the British were enemies of the United States. But, armed conflict near the Tippecanoe River in Indiana, in which troops led by William Henry Harrison (governor of Indiana Territory and once aide-de-camp to Wayne at Fallen Timbers) defeated the Native confederation, drove Tecumseh to seek alliance with the British. The legendary Shawnee warrior, fighting alongside the British, was killed in an 1813 battle in Canada, northeast of Detroit.

Defeat of the British in the War of 1812 ended the last Native attempt at confederation. By 1815, American nationhood was secure. Three years later, the State of Illinois was established, and the following year, on July 30, 1819, "the Kickapoo tribe of Indians" (presumably the Prairie Kickapoo) sold/ceded their claims to virtually the entire center of Illinois, up to the Illinois-Kankakee combined watercourse, on the basis of "uninterrupted possession for more than half a century."

This treaty included a legal description of the tract of land on the Osage River in Missouri Territory that was to become the new tribal property. It directed that two well-manned boats should be furnished for transport, and promised payment of a 2,000-silver-dollar annuity for the first fifteen years after the move, to be delivered to the Osage River location, in addition to the three



AN ABSTRACT

OF TREATIES MADE WITH THE INDIAN TRIBES BY WHICH LANDS WERE ACQUIRED IN ILLINOIS.

NAMES OF TRIBES	DATE OF TREATY.	ESTIMATED NO OF ACRES
Delawares and others,	June 7th, 1803,	1,631,048
Kaskaskias,	August 13, 1803,	8,608,167
Piankishawe,	December 30, 1805,	2,616,921
Kickapoos,	December 9, 1809,	113,344
Kickapoos,	December 9, 1809,	113,344
Sacs and Foxes,	November 3, 1814,	4,000,000
Ottowas,	August 24, 1816,	3,911,431
Peoria and others,	September 26, 1818,	7,138,398
Pottawatomies,	October 2, 1818,	899,615
Kickapoos of Vermillion,	August 30, 1819,	2,343,049
Kickapoos,	July 30, 1819,	969,400
Winnebagoes,	August, 1, 1829,	6,000,000
Ottawa, Chippewa, and Pottawatomie's	July 29, 1829	1,300,000
Pottawatomie's of the Prairie, and Kankee,	October 20 1882,	1,900,000
Winnebagoes,	September 15, 1832,	quantity not known
Sacs and Foxes,	September 21, 1832,	do. do.

The precise number of acres cannot be ascertained, until the public surveys are compleated. So far however, as the surveys are compleated, we are of the opinion the above estimates will be found sufficiently accurate. The State is said to contain 40,000,000 of acres, and at this time the Indian title is nearly extinguished. The policy adopted by the President for the removal of the Indians beyond the limits of the States, is approved by the people; a few years will effect the object, so far as Illinois is concerned, and will at once terminate all apprehension of further disturbance between the whites and their red neighbours.

Readers of the November 2, 1833, issue of the Danville Enquirer *may have taken for granted the revealing sentiments expressed in the last six lines of this newspaper notice, which today would be seen from a different perspective.*

thousand dollars worth of merchandise to be transferred to them at the time of treaty signing.

On August 30, 1819, one month after the first treaty, "the tribe of Kickapoos of the Vermilion," acting separately from the Prairie Kickapoo, sold that part of the earlier-treaty land that they identified as their own, expanding it on the northeast up to Pine Creek in Indiana. The Vermilion Kickapoo also received three thousand dollars at treaty signing and were promised a two thousand-dollar annuity (though for only ten years) to be delivered at the not-yet-specified location where they were to relocate, ". . . as the said tribe contemplates removing from the country they now occupy . . ." But bands of Vermilion Kickapoo ". . . lingered in Illinois upon the waters of the Embarras, the Vermilion, and its northwest tributaries, until 1832 and 1833; when they joined a body of their people upon a reservation northwest of Kansas City set apart for their use . . ." (Beckwith).

Scattered groups of apparently amicable Kickapoo, Potawatomi, and Delaware were still hunting seasonally in the streamside timbers of the study area as early settlers arrived to begin "improving" their newly purchased tracts, transforming hunting territory into full-production farms.

REFLECTIONS

In ecology, the natural order is change. Small innovations constantly emerge, finding a place in the interacting ecosystem or dissipating. Members of the cognitively skilled "modern-human" species, however, after thousands of years of fitting into the natural scheme as hunter-gatherers, very gradually began to initiate innovations themselves, which would alter ecosystems worldwide. They learned to control the location and the reproduction of some of the species of animals and plants upon which they depended. A slowly accelerating side effect of mankind's development of full, managed food production, and the associated animal-energy applications (developed first in the Near East), was an ever-increasing rate of population growth. Inevitably, as human numbers increased, due to their Nature-exploiting innovations, their species would come to occupy virtually all arable lands on Earth.

Nature, however, was reserving one entire hemisphere pristine, where the technique of animal husbandry was not an accessible option, millennia after the technology had been integrated into Old World lifestyles, a continent where bands of humans still competed, in Nature's old way, for hunting territory to feed their families.

While agricultural management of plant resources was achieved in many locations on earth, the top-utility, wild-but-genetically-domesticable, herding, grazing herbivores—sheep, cattle, and horses—were unique to the Near East and nearby Russia. And, although this rich opportunity for animal-resource management lay just through the Sinai gateway from the African origin of our species, "modern" humans had dispersed, from there, into all the continents of the world well before nomadic hunters of the Near East discovered that they could control this animal resource (after some 30,000 years of human occupation of the area). By that time, rising sea level during the great glacial thaw had closed the Bering Strait gateway into the American continents. First Americans were isolated, not only from the technology of animal domestication (with the exception of canine species and camel species of South America), but, actually, from access to any significant, genetically-domesticable animals. After the Pleistocene extinctions and migrations, none existed in North America (Diamond 1997).

When the sea barrier was eventually overcome from the east by a European-origin population long-versed in species control and use of supplemental animal energy, the newcomers' exponentially increasing numbers, alone, irresistibly claimed vast expanses of virgin New World soil for intensive food production. Not only was survival of offspring enhanced by dependable food availability, but infants weaned early to domestic dairy milk made way for closer spacing of siblings in the newcomer population—thus more offspring per mother—as compared to the resident population. Typically, young husbands of the frontier, themselves raised in enormous families by today's standards, urgently required new sustaining farmland to feed their own large families. In practicing the Nature-management techniques, which their own remote ancestors had adopted from the Near East inventions, they required less land per person than the Native hunters. The creeping invasion into Native hunting territory was not wholesale, but insidious, one independent family farm at a time, then another, and another.

The already lower-fertility Native population (further diminished by alien diseases and alcoholism) was trapped in an urgent process they could neither control nor fathom. Objectively viewed, neither the Native nor the newcomer population possessed tried and proven precedents for dealing with the situation. Moreover, the confrontation was unprecedented in scale, involving, in our focus, the land-use transformation of an entire continent in only about two centuries. Though little understood as such, the event may be viewed as perhaps the Demographic Epic of human history up to that time—the outcome, both irresistible and irreversible—*Demographic Destiny?*

THE TRIBAL GROUPS that ceded land in the study area demonstrate three close-up case histories in the course actually taken in the Native-to-newcomer takeover. At first, when the earliest-arriving French interacted with people of the *ILLINOIS CONFEDERATION,* it was the French who seemed to take on Native ways. French fur trappers often lived in Indian villages, all but indistinguishable from their hosts. Then, as "New France" developed a governmental structure centered in Ottawa, a system of gifts and annuities tied some tribes of the Illinois to the French administration, and tribal villages

often clustered around French trading posts/missions/forts. There was always a tendency, however, for Natives who were in close contact with Whites to lose old cultural structures without the capability of immediately constructing new ones. As an example, native men, accustomed to thinking of crop cultivation as women's work, found plow cultivation by men distasteful. After the British took over New France in the 1760s, many of the Illinois apparently lost a sense of purpose and direction. Lives were ruined and lost to alcoholism and indirection. Already decimated by persecution at the hands of other aggressive Algonquians of the lower Lakes latitudes, the Illinois came close to extinction.

The Kickapoo, on the other hand, avoided contact with Whites, did not intermarry with them, and may have had minimal commerce in liquor. Hiram Beckwith, in 1884 (still close to the times), characterized those Kickapoo of history as having been ". . . industrious, intelligent, . . . cleanly in their habits . . . [well] armed and clothed . . ." We can conclude that the Kickapoo maintained cultural adhesion, direction, and purpose throughout the times of their initial confrontation with Whites simply by avoiding them.

The *PRAIRIE KICKAPOO,* as we have seen, persisted in avoiding Whites long after selling their tribal lands; some bands for a time even retaining "the wild ways" of the hunter after retreating to northern Mexico.

The *RIVER KICKAPOO,* more adaptable, settled on the land reserved for them west of Kansas City, where (again in Beckwith's words) they became respected for ". . . their good conduct, comfortable homes, and well-cultivated fields . . ." We may conclude that this group successfully retained its individual identity while integrating the inescapable conversion to animal husbandry and the plow into its life and survival style. Objectively viewed, they accepted the only viable survival option for the hunter-gatherer-gardener,* as technologies, invented in another hemisphere, from 10,000 through 6,000 years earlier, swept rapidly across the North American continent. (*Use of the word "gardener" here implies the labor-intensive hand/hoe cultivation, as opposed to animal-propelled plow cultivation.)

POSTSCRIPT. In 1800, no part of the future state of Illinois had been ceded by Natives, except for the handful of small tracts around strategic river locations specified in the 1795 Treaty of Greenville. Euro-American occupation was sparse, mainly scattered along major rivers. Exactly two centuries later, in the year 2000, population of the State of Illinois had reached nearly 12.5 million, through a process that had been, realistically, unstoppable. Less than two-tenths of one percent could be identified as of Native tribal origin.

SOCIOLOGISTS/ANTHROPOLOGISTS would view the life-and-survival techniques, both of the Native and of the newcomer populations, as having been obviously successful, on their own. Each, however, had its own handicaps.

In the hunter-gatherer-gardener lifestyle of trans-Appalachian Algonquia, development of the complex potential of the human species was slowed, because with no significant, genetically-domesticable animal species available for work or product, its population was limited to human-muscle power in performing tasks. Much time and energy were expended in hunting and in continual, often lethal, warfare to maintain "territorial" hunting rights.

On the other hand, the life-and-survival techniques of the managed-food-producing, animal-energy-exploiting, land-owning, new-comer Europeans came with a built-in self-destruct feature, because it engendered random, rapid population increase unregulated by natural factors. After spreading to every available landspace, it may be destined to consume the survival-resource capital upon which its lifestyle depends, whether fuel, water, or soil.

THE ETHICAL SENSIBILITIES of the Founding Fathers were strained by the plight of the First American, as the wave of New Americans rolled westward across the continent.

On December 22, 1802, John Quincy Adams, speaking to a gathering of Sons of the Pilgrims, anticipated "political correctness" by nearly two centuries:

> *There are moralists who have questioned the right of Europeans to intrude upon the possessions of the aborigines in any case and under any limitation whatsoever. But have they maturely considered the whole subject? The Indian right of possession itself stands, with regard to the greatest part of the country, upon a questionable foundation. Their cultivated fields, their constructed habitations, a space of ample sufficiency for their subsistence, and whatever they had annexed to themselves by personal labor was undoubtedly by the laws of nature theirs. But what is the right of a huntsman to a forest of a thousand miles over which he has accidentally ranged in quest of prey? Shall the liberal bounties of Providence to the race of man be monopolized by one of ten thousand for whom they were created? Shall the exuberant bosom of the common mother, amply adequate to the nourishment of millions, be claimed exclusively by a few hundreds of her offspring? Shall the lordly savage not only disdain the virtues and enjoyments of civilization himself, but shall he control the civilization of the world? . . . No, generous philanthropists! Heaven has not been thus inconsistent in the works of its hands. Heaven has not thus placed at irreconcilable strife its moral laws with its physical creation.*

Thomas Jefferson suggested racial amalgamation. In 1808, he told the Delaware:

> *. . . You will find that our laws are good. . . . You will wish to live under them; you will unite yourselves with us, join in our great councils, and form one people with us, and we shall all be Americans. You will mix with us by marriage. Your blood will run in our veins and will spread with us over this great island. (An outcome not unlike what actually ensued throughout much of Central and South America.)*

Alexis de Toqueville, a French historical analyst of the time, wrote, following his 1831 visit to the United States: *The Indians occupied but did not possess the land. It is by agriculture that man wins the soil, and the first inhabitants of North America lived by hunting . . .*

A county history of Delaware County, Ohio, provides: *The true basis of title to Indian territory is the right of civilized man to the soil for purposes of cultivation.*

"The Soil," then, was a near-sacred term to the pioneer stock-and-crop farmer. The system used by the United States government to subdivide this sustaining land, and ready it for conversion to private property, is the subject of the third book of this series.

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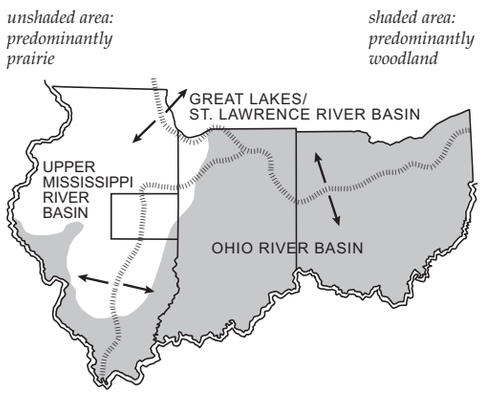
PART III

Measured, Marked, and Recorded: Wilderness Becomes Real Estate

1805–1845



REGIONAL ORIENTATION STUDIES in History/Geography: East-Central Illinois

- ☐ Part 1: Landforms and Ecosystems in the Making
- ☐ Part 2: Hunting Territory to U.S. Public Domain
- ☑ Part 3: Wilderness Becomes Real Estate

Partitioning the Public Domain: Emergence of the American Rectangular Land-Survey System

Boundaries, Fluid and Fixed

Boundary-Fixing, Two Ways

The Land Ordinance of 1785

The Miracle Eightieth-of-a-Mile

A Square of Squares

Crossing the Wabash, 1805

Spring 1821, East-Central Illinois

Collision Zones

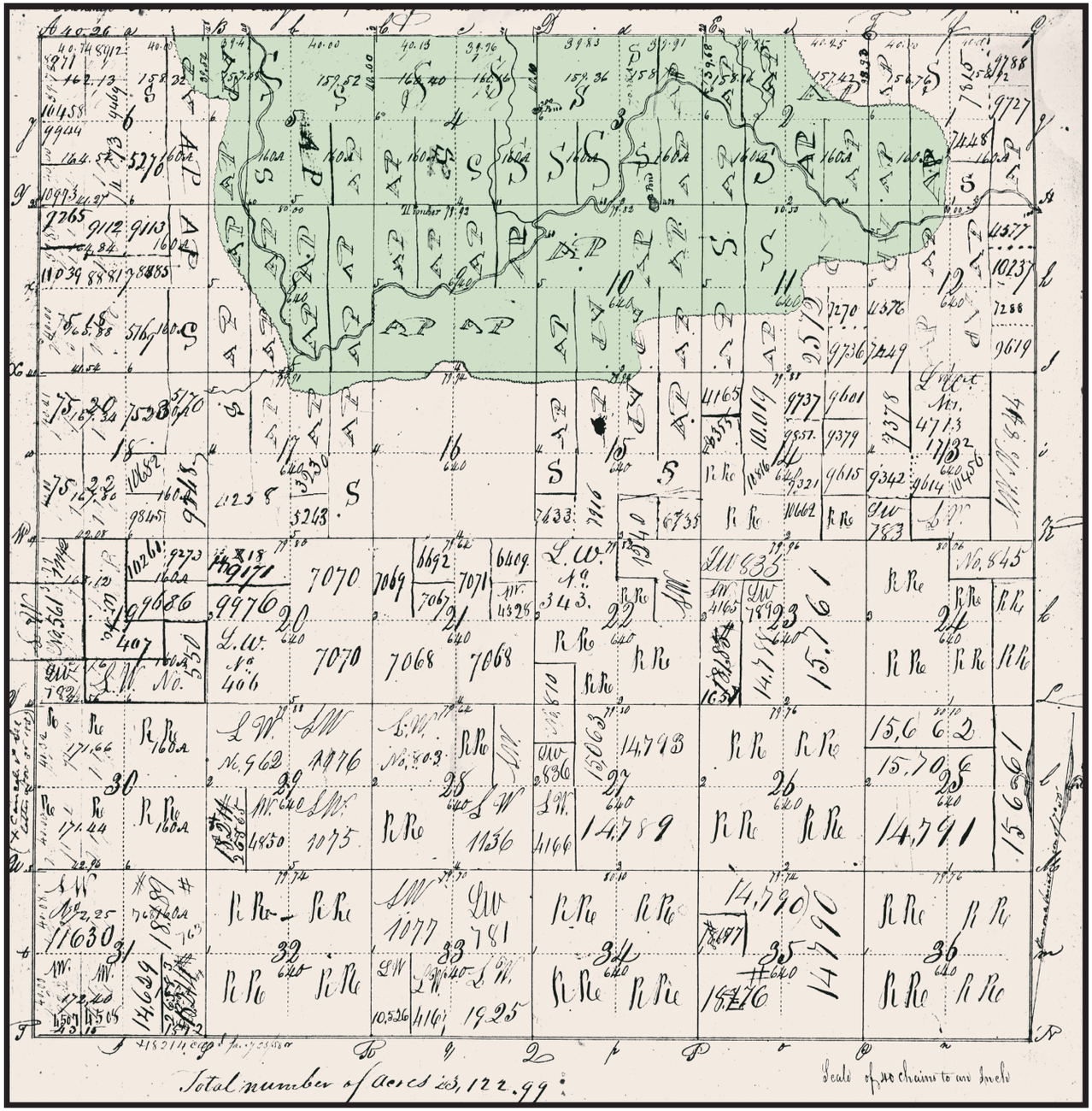
Aftermath

Marketing the Public Domain: Federal Land Office Sales Convert Government Land into Private Property

Land Office Operations

Land for Livelihood

Land as Capital



"Township No. 19 North, Range 9 East of the 3rd Principal Meridian Line,"

This reproduction of an annotated Township Plat, preserved from the Register's Office of the Danville-District Federal Land Office (1831–1856), exemplifies the innovative procedure devised by Thomas Jefferson, et al., for converting a natural landscape into blocs of privately owned farmland.

The underlying map was drawn at the Regional Federal Land Office in St. Louis, where draftsmen translated information, entered by Government Surveyors in their Field Notes, into map form, as Township Plats. Besides delineating the measured locations of the 1-mile-square-Section grid of each 36-Section Township, these plats showed the estimated location of timbered areas and watercourses. Prepared in triplicate, one copy of each individual plat was then sent to the Register's Office at the Local District Land Office, where tracts of land would be marked off, as they were registered as taken and no longer available.

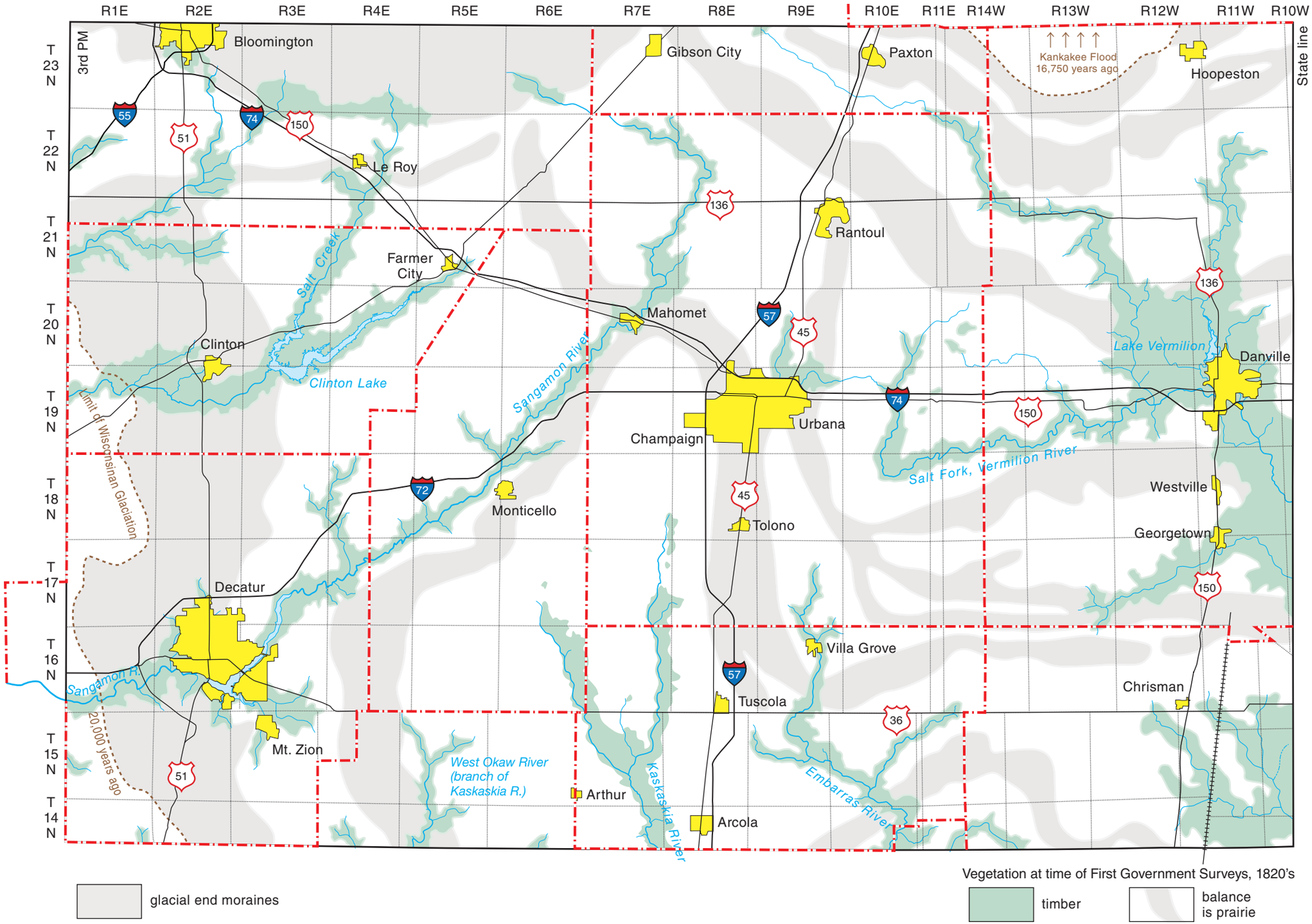
This map displays the southern part of "Big Grove," the pioneer-era timbered area around the elbow bend in the Saline Branch of the Salt Fork of the Vermilion River. The city of Urbana and the University of Illinois campus were to develop eventually, extending from the southwestern tip of Big Grove.

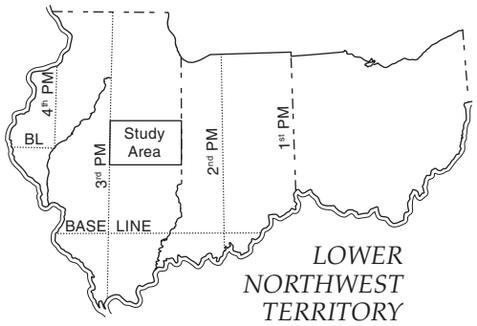
Surveyed in 1821, offered for sale in 1822 at the Palestine District Land Office (1820–1855), this Township had no buyers until June 27, 1828, when a resident since 1822 purchased 80 acres adjacent to his home/trading post, strategically located on the Danville to Fort Clark trail. When the Danville Land Office opened for business in February 1831, the "Tract Book" was transported from Palestine to Danville and sales resumed.

Notation systems evolved. Tracts sold at the Palestine Land Office, and then through 1831 at the Danville Land Office, were marked **AP**. This notation is generally thought to have signified "applied for."

During 1832, '33, and '34, the Register at Danville changed to the notation **S**, presumably for "Sold." Then, as the rush to buy lands in or near timber went into full swing during the last half of the 1830's, tracts were marked with the number of the sales receipt. Lands paid for with the Land Warrants given as partial pay for service in the Revolutionary War carry the notation **LW** with the identifying number of the warrant, while lands within six miles on either side of the proposed railroad, and not sold by 1851, are granted to the railroad, and marked **RR**. Section 16 was reserved for a later auction sale, proceeds to be used in support of the local school system.

The East-Central Illinois Study Area

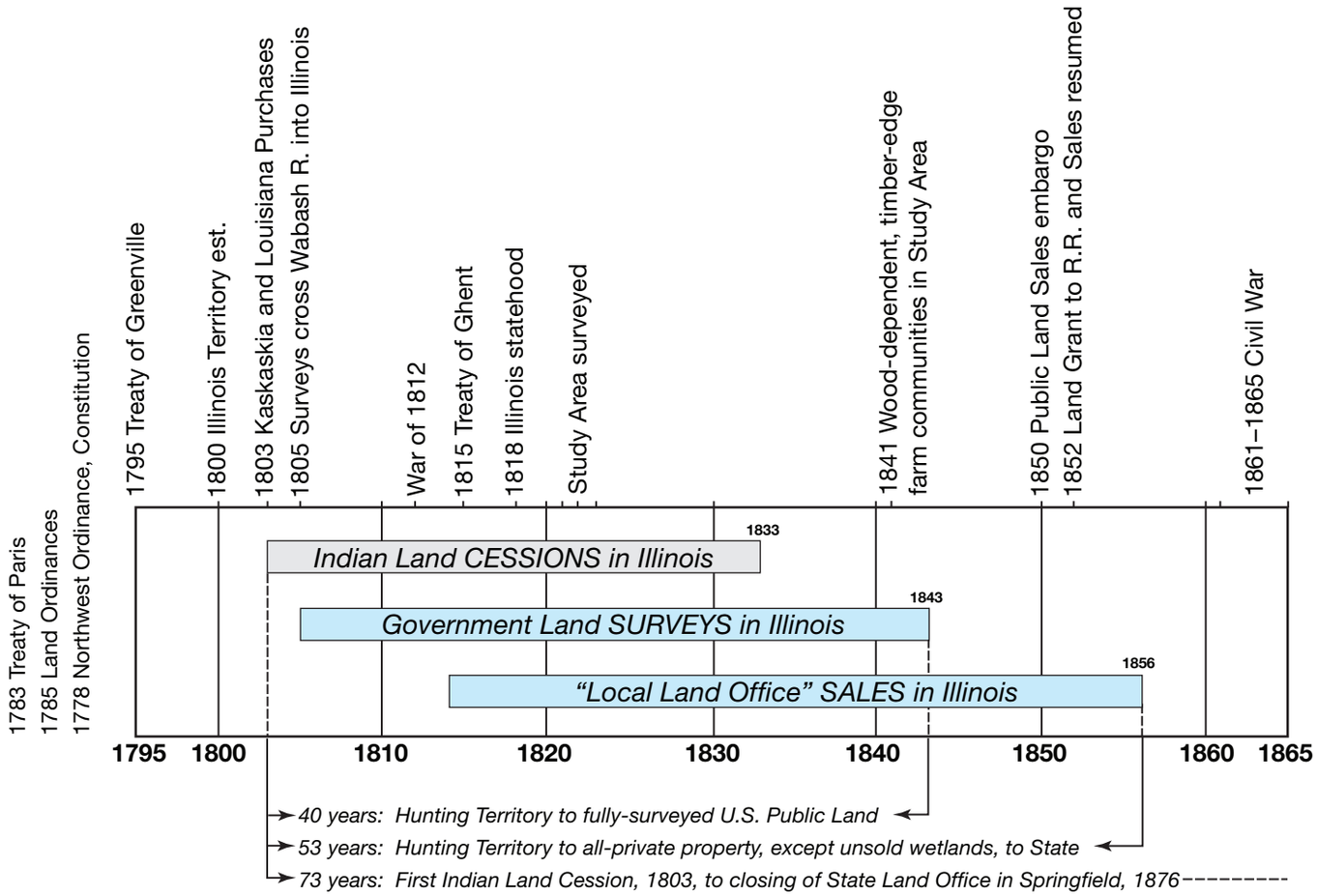




Cradled within the confluence of two great rivers of northeastern mid-continent, these lands were a proving ground for the systematic conversion of Territory into Real Estate (Landscape into Land), as decreed in the Land Ordinance of 1785.

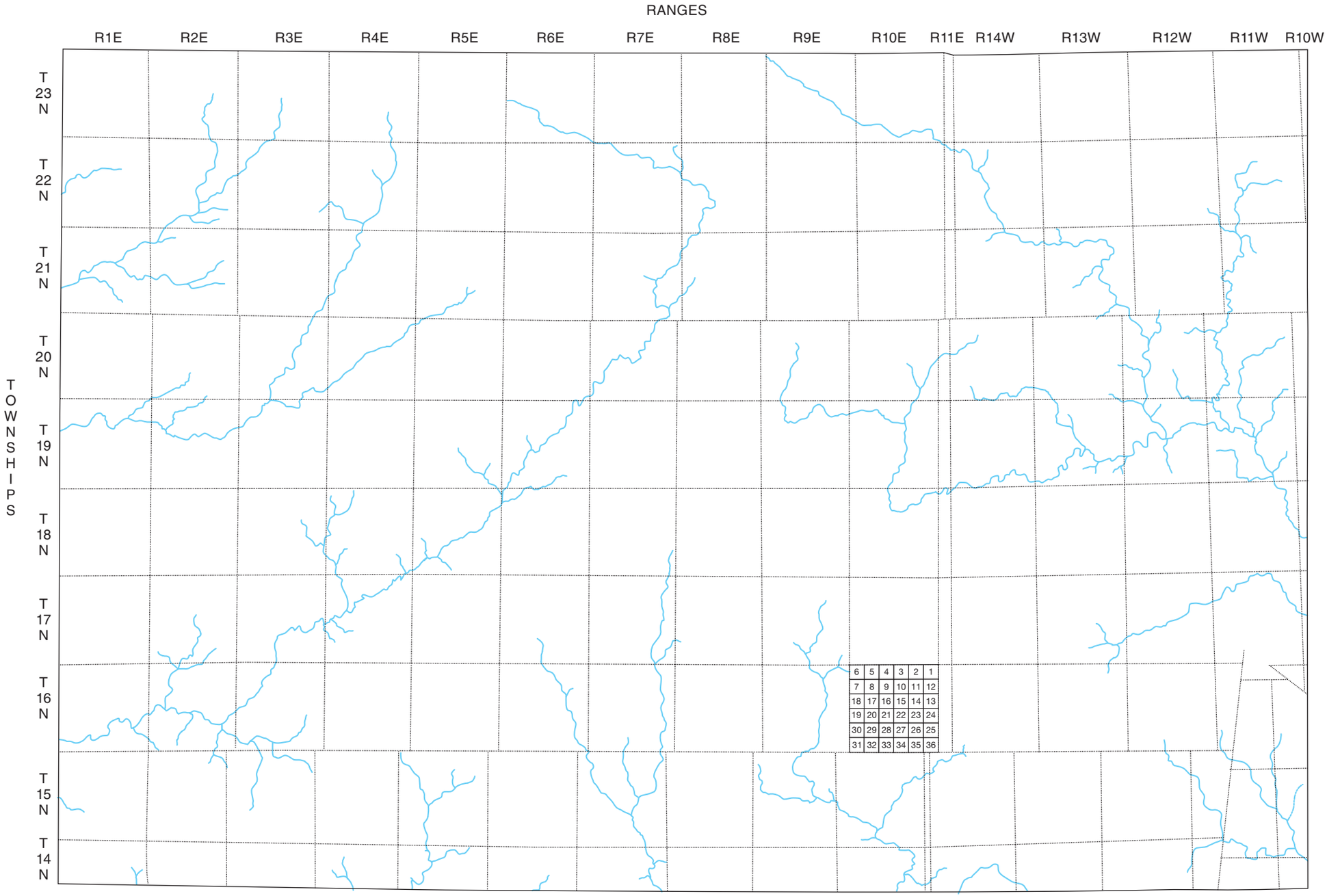
RAPID CONVERSION OF WILDERNESS LANDSCAPE INTO SURVEYED PRIVATE PROPERTY, 1803-1876

In less than a single lifetime, the Illinois LANDSCAPE was transformed from a wilderness marked only by the hunter's path, into about 56,000 compass-oriented, square-mile *sections* of LAND, measured on foot, marked in the field, recorded on paper, marketed as real estate, and "sold out," except for non-arable wetlands—all within the space of 53 years. The meandering landforms of Nature were overridden by rectangular-bounded, stock-and-crop farms, as the husbandry-man crowded out the hunter. In the process, the hunter's province was redefined as a form of investment capital.



The Rectangular Survey Grid

Applied to the East-Central Illinois Study Area



PARTITIONING THE PUBLIC DOMAIN

Emergence of the American Rectangular Land-Survey System

BOUNDARIES, FLUID AND FIXED

In the pre-agriculture, "natural" world, human hunter-gatherers were territorial. Each band defended the boundaries of its exclusive food-providing space from invasion by competing bands. The range of the band's activities was related to Nature's *random location*, in the landscape, of the food resources needed for survival. Territorial boundaries shifted about kaleidoscopically, as conditions in Nature and within bands changed. But with their gradual conversion to full, managed food-production, humans themselves determined the *location* of their food resources, both plant and animal.

In managed food-production, selected seeds are planted in prepared locations, which are optimal for their germination and for their survival into harvest. Thus, food-producers had even greater proprietary interests in the tract of soil into which they invested their energies each season—with postponed rewards—than did hunter-gatherers, in "territories" where they merely collected what Nature had produced.

The shifting, human-food-providing land-spaces of Nature's territorial regime—and their boundaries—were by necessity stabilized when the *location* of human food resources was no longer a random function of Nature, but was controlled by deliberate choices of humans. "Civil" agreements had then to be reached between neighbors, on the location of fixed boundaries separating their respective food-production areas. The concept of "real" property emerged. *(Territorialism and property ownership are both systems for exclusionary occupation of land-space. Boundaries of the first are fluid and maintained by force or threat of force; those of the second, fixed, by civil agreement. In the basic model, Territories change hands by conquest; Properties by barter, as Land becomes a commodity. "Indian Land Cessions," the second half of book 2 of this three-booklet study, explored a notable, historic collision between these two concepts of land exchange.)*

Full-food-producing humankind organized itself into cities, provinces, kingdoms and nations, with internal rules about property. "Civil"-ization had been born *(and Territorialism enlarged its scope, setting nation against nation, race against race, in competition for Land!).*

Midwife to Civilization, the need for accurate, recordable location of property boundaries, and computation of the (now marketable, and taxable) land areas which were enclosed by the boundaries, helped to spur the creation of the sciences of astronomy and mathematics—and of writing—in Babylonia and Egypt, and in Greece. Our word *geometry* comes from the Greek: *geo* for earth or land; *metry* for measuring—the science of measuring land.

The first surveyors of land transformed "territory" into property, landscape into "land," greatly multiplying the potential productivity of the Earth—from the human perspective. Land-measuring became crucial to the launch, for better or worse, of the (as yet, unsustainable!) Nature-managing experiment we name Civilization.

BOUNDARY-FIXING, TWO WAYS

By Landscape/Landuse-Relevant Metes-and-Bounds Surveys, or By Geometric, Cardinal-Direction Grid Surveys

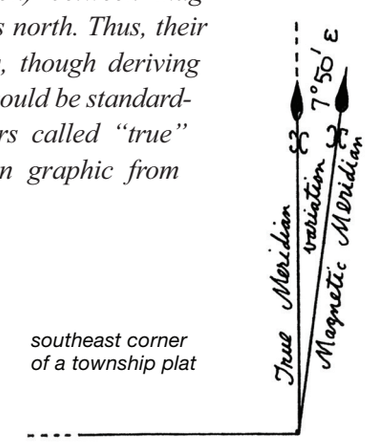
By definition, a surveyed line is a *straight* line. It is directed along the surveyor's line of vision, between two chosen surface points whose separation is then measured, as technology has developed, by stretched rope (ancient Egypt), taut Gunter chain (early U.S.), steel tape, and so forth. Surveyed property lines, from the earliest history of boundary-setting, have enclosed land-spaces within closed perimeters of *straight* lines, i.e., as polygons.

From Babylon to the American Colonies, land-spaces as defined by surveyed boundary lines tended to affirm a *prior use* of the area enclosed (or an immediately projected use), thus were often *rational* with respect to the natural land forms which, to some extent, had suggested the original land use. Surveys were by "metes and bounds," a sort of connect-the-dots enterprise around previously selected land-spaces. The "dots"—corners where surveyed lines met—were "monumented," marked in some way (tree trunk slash, pile of stones, etc.) for future reference.

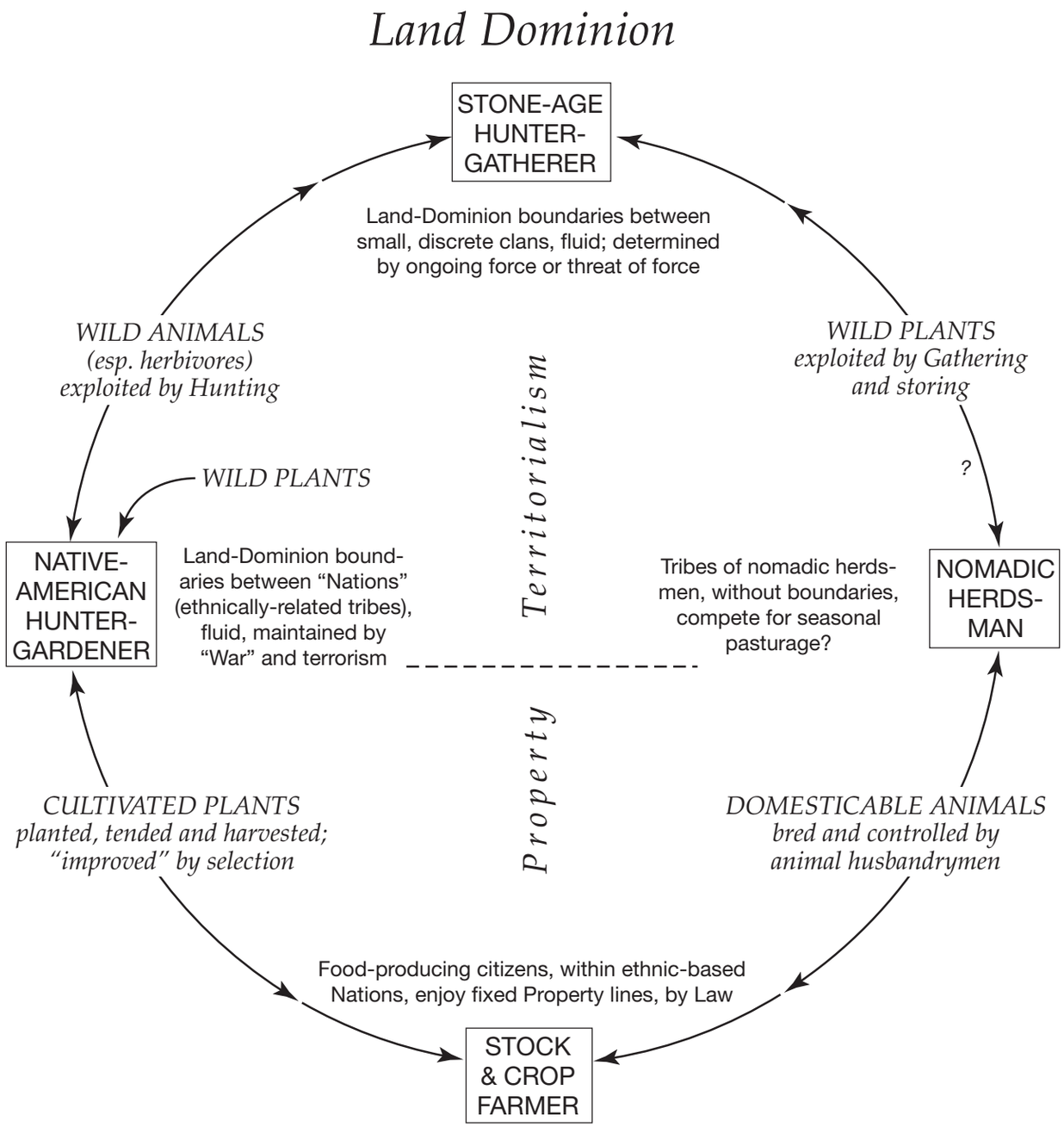
In metes and bounds, each segment of surveyed boundary is completely and uniquely described by three variables in combination:

1) "Monuments" are markers at each end of the (by definition, straight) survey-line. *They may disappear in time or be displaced.*

2) "Angular measurement" is the *acute* angle (bearing) that the survey-line makes with an imagined, true, north-pole-to-south-pole line (meridian) drawn through one end of the survey-line. The angle between the meridian line and the surveyed line is expressed in number of degrees that the surveyed line diverges, east or west of North *or* east or west of South. *Astronomers found that a bright star, Polaris, happens to lie on an extension—way, way out into space—of the line of axis of our Earth's rotation (the line through the Poles), thus will always show true north, from any point in the northern hemisphere. Providentially, Earth turns out to be a colossal magnet, the north-south magnetic poles of which nearly coincide with the north-south poles of rotation. Colonial and post-Revolution surveyors routinely corrected their magnetic compasses for the variable-by-location "variation" (declination) between magnetic north and Polaris north. Thus, their angular measurements, though deriving from magnetic north, would be standardized to what old-timers called "true" north. (See declination graphic from old land plat, right.)*



southeast corner of a township plat



Systems for Allocating Land Space to Humans, as Related to Use of the Plant and Animal Resource

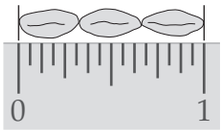
Strategies for Evenly-Spaced Allocation to Humans of Surface-Zone Resources, to Enable Species Survival

Early humans, as a social species, promoted species survival by dividing into small, structured groups. Cooperation was the rule within each group, to the point of altruistic sacrifice of life to ensure the group's survival; persistent, warring competition was the rule between groups.

NATURE developed ways to evenly allocate, to human groups, areas of the life-supporting surface layer of Earth, through the competitive system we call *Territorialism*, a system dependent on continuing, two-way pressure of force, at the fluid interface between adjoining group territories.

When domestication of plants and animals necessitated more stable boundaries, CIVILIZATION was born. Allocation of areas of the resource-producing, life-supporting surface layer then required exacting identification of land tracts, by measure, and its legal definition as *Property*.

3) "Linear measurement" counts the number of standardized units of length covered by the survey-line. *But, prior to modern technology, NOTHING in Nature could be found that was always the same length. The history of standardizing length measurements is a colorful one (three barley-corns laid end to end to define an inch, for one example!). Colonial and post-Revolution America adopted the familiar land measurement standards developed earlier in England.*



"Three barley-corns laid end to end"—Old England's first measure of an inch (Kernel from the center of a head of barley, assumed one-third inch long)

Although the practical, metes-and-bounds surveys, which enclose function-relevant land-spaces, predominated in boundary surveys here until after the American Revolution, an alternative concept had lived in the human imagination since earliest times. The *concept* (magical? esthetic? sacred?) of perfect perpendicularity at the intersection of cardinal-direction lines (north-south lines directed by the North Star, east-west lines paralleling the line between horizon points of sunrise and sunset at spring and fall equinox) was incorporated into location of some land boundaries as early as Babylon. Cardinal-direction boundary lines were used later, in Roman military camps, in the Netherlands, in many local communities of the American Colonies, etc.

In this so-called Rectangular (right-angled) Survey system, *every* surveyed boundary line is either an east-west or a north-south line (no *angular* measurements needed for lines which are compass-directed in one of the four cardinal directions!). Function and natural land-form are ignored (except for major rivers); order and record-keeping convenience prevail. *In the basic U.S. model (later segment), tiers of equal-square land-spaces may be numbered, uniquely identified for the written record, and systematically marketed to private buyers.*

The metes-and-bounds system of surveying boundary lines, however, will always remain useful in the United States—in defining irregular land-spaces bounded by lines not oriented to the cardinal directions; and in areas not originally governed by the Rectangular Survey, as the states of the original colonies, and Atlantic seaboard states, and some Southern states and Texas.

THE LAND ORDINANCE OF 1785

The Jefferson Committee Decrees Crosshatching of "the Western Lands" with a Prior-to-Sale, Compass-Aligned, Property-Line FRAMEWORK

Revolution-era Americans saw their new country as bounded east and west by the Atlantic Ocean and the Mississippi River, north and south by the boundary Great Lakes and Spanish Florida. Paralleling the coast, the Appalachian Range separated the populous, seaboard states from "the Western Lands," which for the New Americans concluded at the Mississippi River. The Ohio River divided the Western Lands into southern states and Northwest-Territory states. *(Our focus here is on the Lower Northwest Territory, the lands that became the states of Ohio, Indiana and Illinois.)*

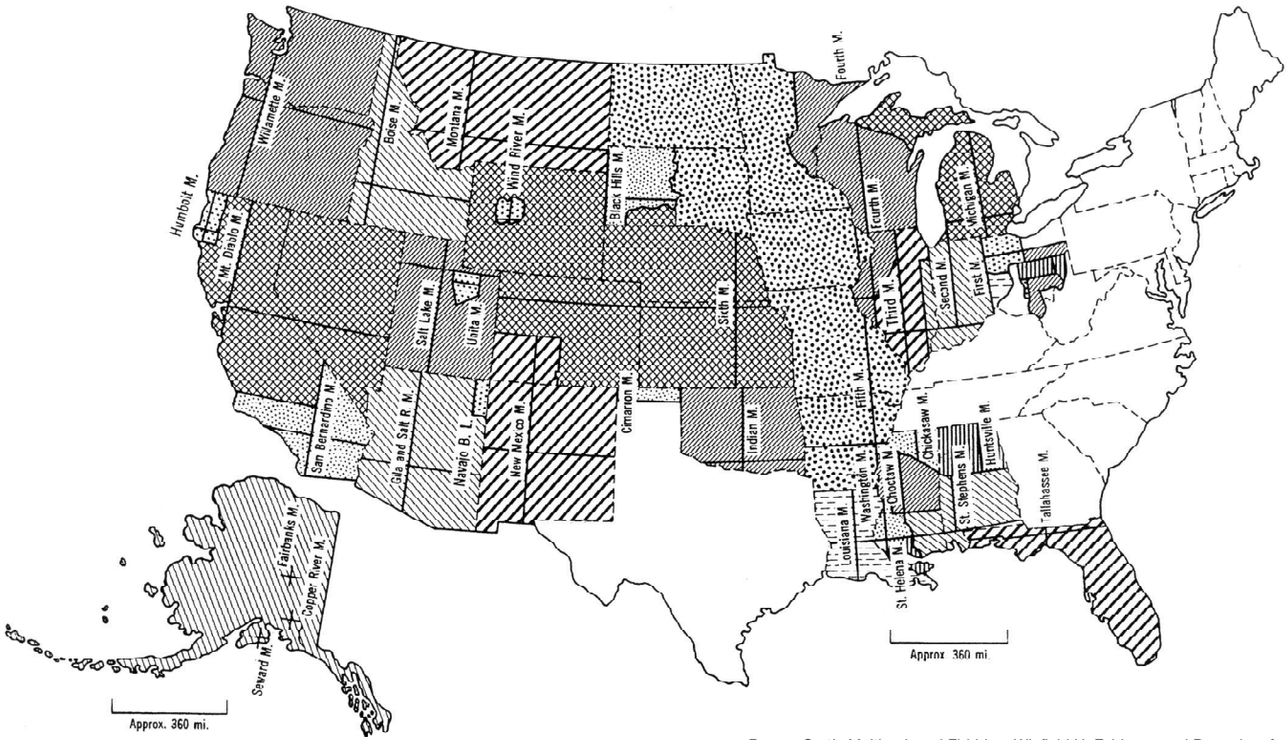
Most of the prosperous farms of the Seaboard Lands were bounded by rambling *angular survey* lines, determined by function, or by the natural landform of the land enclosed, while the Western Lands, province of hunter, trader, and restless new pioneer, lay virtually unmarked by the fixed, legal boundaries which circumscribe units of the legal property so vital to the settled food-producer.

Thinkers and planners of the new Nation in the process of inventing itself saw the Western Lands as a blank slate, offering an opportunity unique in the world's history of land ownership, at least at that magnitude. The government-owned "vacant lands" between the Appalachians and the mighty continent-dividing river would be marked by government surveyors, *pre-establishing* a compass-oriented, square-grid *framework,* elements of which could be uniquely described on paper, and on plat-maps, enabling future sales of specific land parcels to private owners. These "prior surveys" would be *guide* lines, not really *property* lines, until the land-space they enclosed was converted to private property. Potential future land use would be of no consideration in the setting of these lines, in contrast to the more land-use-motivated, metes-and-bounds system.

Under the assumption that the sparse population of native tribes would barter away sprawling, hunting "territories" and be re-located on farming-proportioned "land," the planners saw the growing U.S. population as expanding, step-by-step westward, into the Western Lands, on the heels of Government Surveyors (themselves on the heels of land cessions by local tribes). With the mile-separated, compass-oriented lines of the right-angled grid framework serving as reference, the area within each mile-square "section" could then be geometrically subdivided on the basis of land-choices of individual buyers, and purchased from the federal government (proceeds going to the heavily war-indebted U.S. Treasury).

The planners could not have foreseen that one day a United States, stretching to the Pacific, would resemble an enormous patchwork of separate but adjoining grid-charts—laid out over natural land-forms—where the smallest land-space location could be uniquely described and legally bartered for, thanks to the prior-to-use, Rectangular-Survey system they were working to evolve. (See Brown and Eldridge map, next page.)

Base Line/Principal Meridian Sets and the Areas Controlled by Each



Brown, Curtis Maitland, and Eldridge, Winfield H. Evidence and Procedure for Boundary Location. New York: John Wiley & Sons, Inc., 1962. Third Ed., 1994

Pre–Land-Ordinance Chronology of Events, 1780–85

1780. An extreme (more-idealistic-than-practical) model for settling of the Western Lands, east-to-west by orderly increments, was proposed before the end of the Revolutionary War in a pamphlet circulated by Peletiah Webster. He suggested that: the "unlocated" Western Lands be held in an uncultivated state, free from squatters, until the adjoining land was settled. Then would be laid out, one at a time, north-south tiers (ranges) of townships six, eight or ten miles square, adjoining the land previously settled. Ways of policing adventurous squatters were not provided for! This model for surveys/settlements, in orderly increments westward, was reflected later in Congress' Seven Ranges plan. The Public Domain was to be surveyed seven ranges at a time, before settlement, as public demand for land dictated, then auctioned to provide funds for the U.S. Treasury. The plan was implemented only once.

1783. By year's end, Britain and the United States had signed a Treaty of Peace in Paris, and the seaboard states had turned most of their Old-World-Charter claims to presumed extensions of their states into the Western Lands over to the new Public-Domain system of the United States Federal Government. Virginia reserved a strip of future Ohio as "bounty land" for Virginia war veterans. Subsequent surveys in this "Virginia Military District" were in metes and bounds, as in the mother state. And, until 1800, Connecticut reserved for settlement by its citizens a segment of its western charter lands, also in future Ohio. This tract, known as "The Connecticut Western Reserve," was surveyed independently.

1784. The first tentative report on plans "for disposition of the western lands" was proposed to Congress by a Committee headed by Thomas Jefferson. A onetime County Surveyor of Albemarle County, Virginia—where his father Peter Jefferson had once served as Assistant County Surveyor—Jefferson had floated, in this proposal, ideas about States of nominally equal sides, to be bounded by latitudinal lines (parallels) and by longitudinal lines (meridians). As a promoter of the decimal system, Jefferson proposed *square* townships ten miles on a side, called "hundreds," consisting of one hundred mile-*square* "lots" (which we would now call "sections"). Small wonder that contemporaries sometimes characterized Jefferson and his Committee as "square-minded."

Today's retracement surveyors would object to the word "square" applied to a polygon on a spherical surface, but throughout history most laypersons have perceived the land within their view as essentially a flat plane, interrupted by landscape irregularities. And certainly, the practical farmers swarming into Illinois in the late 1820's to 1850's (the focus of this segment) viewed sections and townships as basically square. Whatever human or meridional error occurred, they blithely left to the professionals, who, surveying townships southeast to northwest, allowed irregularities to accumulate on the north and west sides of the township

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In this year of 1784, surveys began which would define the western limit of the post-Colonial state of Pennsylvania. This line is considered the eastern limit of "the Northwest Territory" and of the American Rectangular Survey.

1785. January. A Treaty signed at Fort McIntosh, by members of four area tribes, relinquished about two thirds of the future state of Ohio (the same area which was confirmed ten years later in the Treaty of

Greenville). On the basis of this Treaty, American surveyors began work in several districts in future Ohio, from 1786 on, although the native population rejected the Treaty, in practice.

1785, May. With significant, innovative input from Committee member and mathematician-astronomer Hugh Williamson, the Jefferson Committee produced, and Congress approved, an amended and expanded version of the 1784 report. Old land-survey ideas, and new, were blended into this "Ordinance for ascertaining the mode of disposing of Lands in the Western Territory." Subsequently known as the *LAND ORDINANCE of 1785,* it introduced to world history its first national, prior-to-use, land-survey policy, and the first detailed version of the Rectangular Survey system, as used, with many subsequent amendments and revisions, in the United States thenceforth.

1785, September. Under the direction of U.S. Geographer Thomas Hutchins, first-trial, rectangular surveys in the Western Lands began with The Seven Ranges, across a wedge of land bounded east and south by a curve of the Ohio River and on the north by the Forty-First parallel. Each "range" consisted of a north-south tier of six-mile-square "townships" surveyed and numbered east to west.

In planning the application of pure, flat-plane geometry, in the form of compass-oriented gridlines, across Earth's spherical (and veriform) surface, authors of the Ordinance postponed dealing with problems arising from the convergence of meridians (longitudinal lines) as they diminish to zero separation at the North Pole.

In the first decades of its application, the states of Ohio, Indiana and Illinois became the primary proving ground for the Land Ordinance of 1785. Deputy surveyors, with their crews of chainmen, flagmen, et al., oriented, measured and marked the corners and midside points of myriad square miles, as they worked westward from eastern Ohio to the Mississippi River, while U.S. Surveyor-Generals frequently adjusted survey instructions, to fit complex factors in the field.

The "correction-line" strategy, invented to compensate for curvature of the Earth, came to its maturity in the Illinois surveys. The two east-west "correction lines" which cross our study area were the first such lines to be spaced thirty miles apart, south to north, the spacing followed in most subsequent Illinois surveys, though reduced to twenty-four-mile separations later. (See illustration on page 85.)

Planners ignored the existence of some mid-size rivers, including one great glacial-meltwater river of "the Western Lands"—the Wabash—an omission which led to complications, when surveys had to cross from future Indiana into the future state of Illinois.

In these early "prior" surveys, instruments were sometimes crude. Fifty-link half-chains (eroding at one hundred contact points!) stretched, providing ever-accumulating inaccuracy; not all surveyors were skilled; weather and ground conditions were often challenging; understandably angry natives might obstruct the work. Imperfections in the work were inevitable. Legal "retracement" of early survey-lines still occupies a significant number of surveyors and real-estate attorneys in modern-day Illinois, as they deal with these imperfections.

"Property lines are and will be in the future related to all lines and monuments of the original government surveys. Our land surveyors and engineers, who still have to work on their projects with original government corners, do not have any choice if they wish to perform a perfect work. They must go back to history and learn how the corners and lines of the rectangular frame of original surveys really originated." (Matousek, 1971)

THE MIRACLE EIGHTIETH-OF-A-MILE

Edmund Gunter's Hybrid-Numbered CHAIN Simplifies Acreage Computation

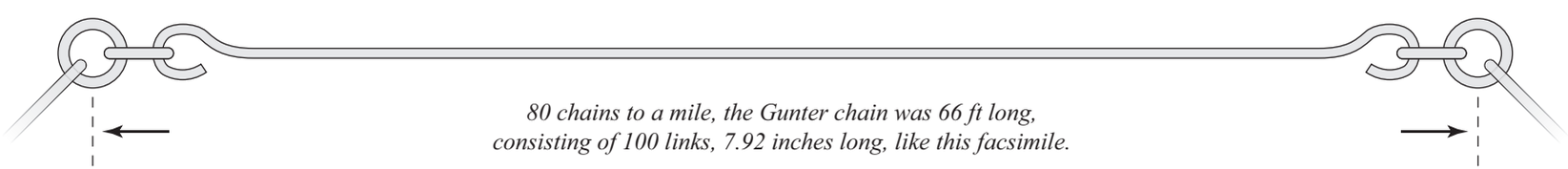
Around the time of Columbus' voyages, the English culminated their long history of devising linear measures by standardizing the MILE at 5,280 feet (and yes, the inch *was* specified as "3 barleycorns layed length-wise"). For practical, hands-on measuring work, they then standardized the ROD ("pole" or "perch") at 1/320th of a mile, or sixteen-and-one-half feet.

The base unit of *area*—the ACRE—was specified as 1/640th part of one *square* mile (a "section," in United States terminology). Translating into rods, one acre then computes out to be exactly 160 *square* rods (example: 10 by 16 rods, or 165 by 264 feet). The 640-acre, one-mile square *section* is fundamental to the U.S. farming community's concept of Land.

A century after Columbus' voyages, as the first English settlements were being established in North America in the early 1600's, a mathematical genius in England, Edmund Gunter, devised a system for calculating land area, which was so simple that any frontier youth who could read, write and cipher could readily make the computation.

Gunter devised a "CHAIN" four rods long, that is, 66 feet—one eightieth of a mile—to be constructed of 100 equal-length links. (In actual usage, it was found that working with a half-chain, 33 feet in length, with 50 links, was more practical than working with a full, 66-foot chain, but distances were still *recorded* in terms of the full 66-foot chain.)

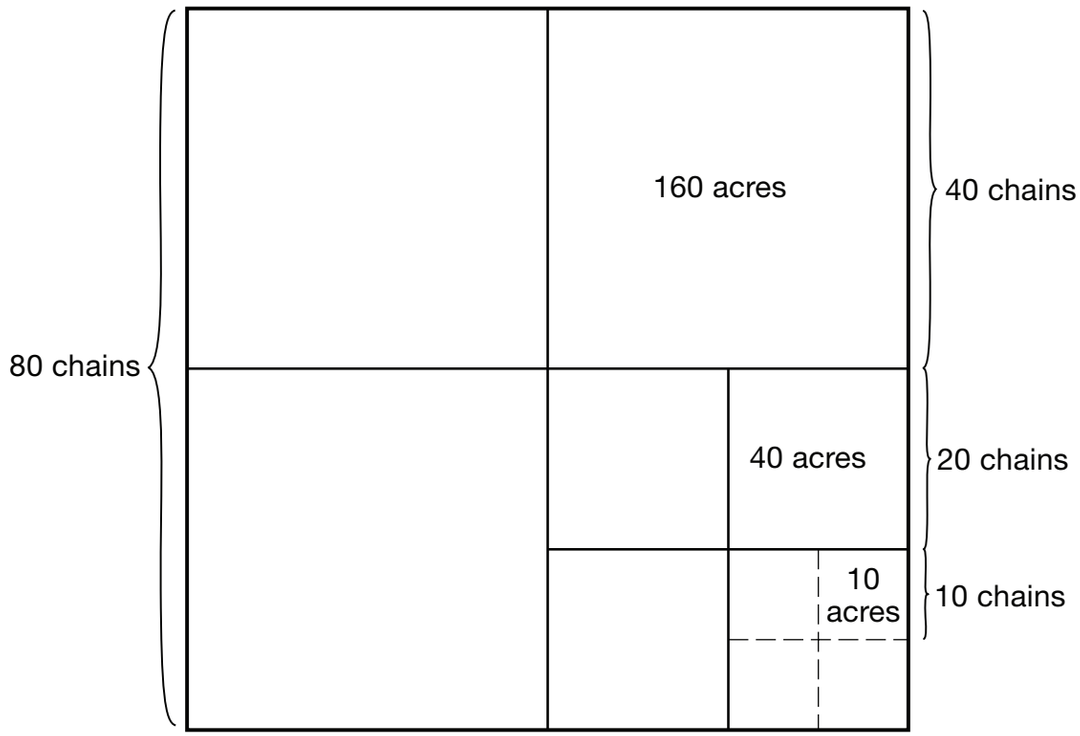
The number of acres in a section—640—is a curious hybrid number, a product of the powers of 2 (2 to the 6th power) and the decimal base of 10, or, to put it in



80 chains to a mile, the Gunter chain was 66 ft long, consisting of 100 links, 7.92 inches long, like this facsimile.

How to calculate one acre

1 mile = 5280 ft = 80 chains; 1 chain = 66 ft



1 square mile = 80 × 80 chains = 6400 square chains

To calculate number of acres from number of square chains, divide by 10:

$$\frac{6400}{10} = 640 \text{ acres in a square mile;}$$

$$\text{A square, 10 chains} \times \text{10 chains} = \frac{100}{10} = 10 \text{ acres}$$

10 chains × 10 chains = 660 ft × 660 ft = 435,600 sq ft, in 10 acres

$$\text{One acre} = \frac{435{,}600 \text{ sq ft}}{10} = 43{,}560 \text{ sq ft per acre}$$

another way, 640 is 4 to the 3rd power, times 10, thus divisible by 4 three times, yielding whole-number products (160, 40, 10). Gunter found that a square mile, with equal sides of 80 chains, had an area of 80 chains times 80 chains = 6400 square chains which, when divided by 10 (just moving the decimal point one place to the left), yielded 640, the exact number of acres in the mile-square section. Moreover, the acreage of any rectangle, with sides measured in Gunter chains, could be computed in just the same way, as the product of the two sides, divided by 10.

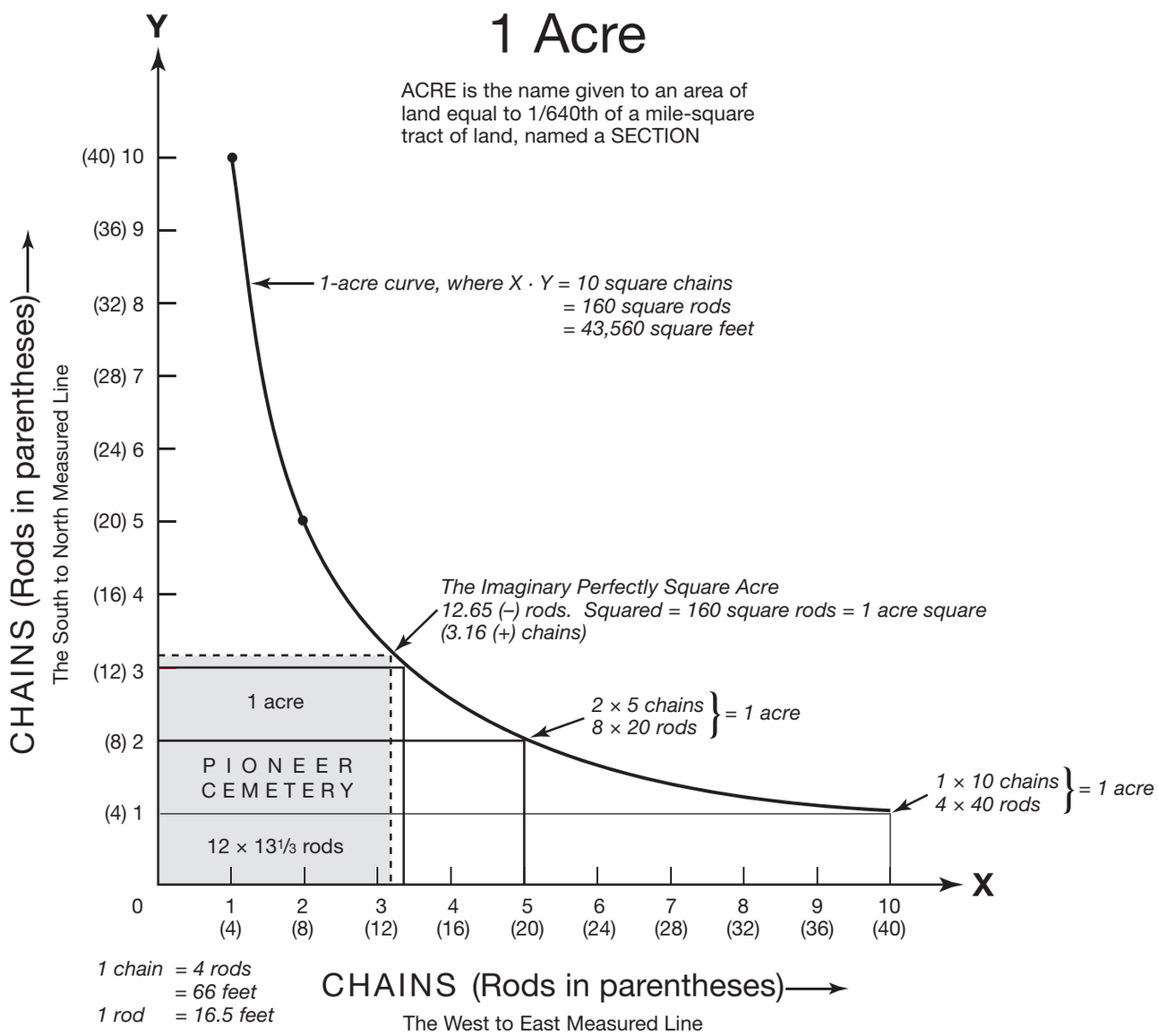
As a power of 4 (times 10), a 640-acre, one-mile-sided, "section" may be divided, first, into four 160-acre, half-mile-sided, "QUARTERS," a popular size for a family farm. Each quarter-section is again divisible into two 80-acre tracts, the smallest unit sold at government land offices until 1832. After that date, a quarter section might be sold in four 40-acre, one-fourth-mile-sided, "quarter-quarter sections."

Somewhat inconveniently, the length of the side of a perfectly square *acre* is an "irrational number." In terms of rods, a perfectly square acre, containing by definition 160 square rods would have sides each equal to the square root of 160, or 4 times the square root of ten, the latter being a number which continues to infinite decimal places—an irrational number. Many of the old pioneer cemeteries in east-central Illinois, which were customarily specified as "one acre," were laid off at 12 by 13 1/3 rods (198 by 220 feet), which computes to a perfect acre.

The basic rectangular-survey *framework* of the First Government Surveys in the United States was laid out and marked in the field by government-employed surveyors. Thereafter, confirming the location of these original section lines (by "retracement"), and subdividing the sections into parcels for purchase, came to be the work of local professionals (such as Abraham Lincoln!) or, eventually, of elected County Surveyors. Imagine how much simpler it was for these subdividers to multiply the two sides of a tract of land measured in chains and divide the simple product by 10, in order to compute the acreage enclosed, than it would be to measure the two sides in numbers of

feet, multiply out the long product (without a calculator!) and then divide by 43,560, the number of square feet in one acre!

With today's mechanical means of measuring and of making calculations, the Gunter chain has been long abandoned, but the original conversion of our entire Illinois landscape into privately-owned farmland during the first half of the 1800's was enormously expedited by the ingenious mathematical concept of Gunter's chain.



The plodding tedium involved in chain-measuring the vast, horizon-to-horizon, east-central-Illinois prairie landscape, just 33 feet at a time, into merely mile-separated grid lines, must have been what prompted one tired member of an 1821 survey crew working in our study area to write in, at the end of a day's field notes, stanzas of school-memorized poems containing the word "chain." (Caps added here for emphasis.)

His CHAIN of gold the King unstrung
The LINKS o'er Malcolm's neck he flung
Then gently drew the glittering band
And laid the clasp on Ellen's hand.
(from Lady of the Lake, by Sir Walter Scott)

and:

Nows the day and nows the hour
See the front of battle lour
See approach proud Edward's power
CHAINS and slavery . . .

Note: This is the second stanza of Robert Burns' "Robert Bruce's March to Bannockburn" which was set to music.

A SQUARE OF SQUARES

Square TOWNSHIPS, Each Enclosing 36 Mile-Square SECTIONS, Organize the U.S. Public Domain

TWO SENTENCES in the Land Ordinance of 1785 preordained what has been called "The American National Landscape"—that ubiquitous, rectangular, property-line pattern, perpetually engraved into our landscape, as obvious from the air, throughout more than two-thirds of the contiguous United States:

> *"The Surveyors, as they are respectively qualified, shall proceed to divide the said territory into townships of six miles square, by lines running due north and south, and others crossing these at right angles,*

as near may be, unless where the boundaries of the late Indian purchases may render the same impracticable. . . . The plats of the townships respectively shall be marked by subdivisions into lots ["sections"] of one mile square, or 640 acres, in the same direction as the external lines, and numbered from 1 to 36. . . ."

The Jefferson Committee planned wisely. The one-mile-grid landscape, unique (at so large a scale) to the United States, has served the independent American character well, separating self-reliant farm families on average a half mile or so, while the six-mile-square-township unit has promoted grass-roots responsibility for local roads, schools, etc.

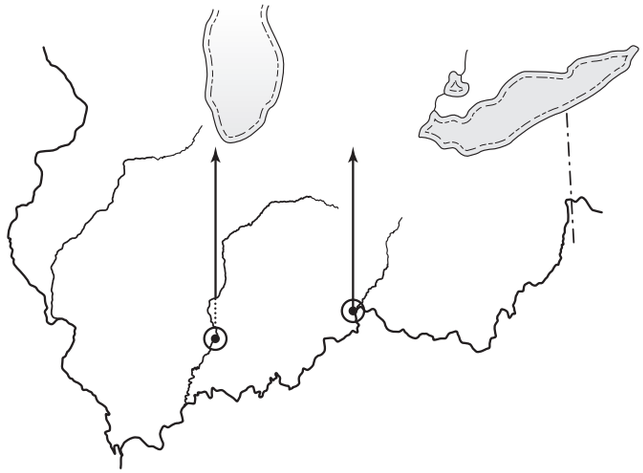
The Land Ordinance of 1785 provided that the section which was numbered 16, near the center of each township, "be reserved for the maintenance of public schools within the said township. . . ." In east-central Illinois, these Sections 16 were sold in segments at auction, the proceeds going to funding for the township school, which might then also become the focus for other local township functions. A landscape organized in this way promoted decentralized, locally responsible government.

The dominant east-to-west progression of these initial government land surveys is clearly reflected in the organization of the six-mile-square townships, into north-south tiers called "Ranges," which march westward across the landscape in strips, roughly paralleling meridians of longitude. *In the 1821 surveys of part of the study area, individual deputy surveyors were each assigned the north-south tier of five townships, in a single range, between two east-west "correction lines."*

CROSSING THE WABASH, 1805

Surveyor William Rector Connects the Surveyors' POINTS OF BEGINNING for the Indiana and the Illinois Surveys

The compass-aligned, neatly square-cornered aspect of future farm fields in much of Ohio, in Indiana and in

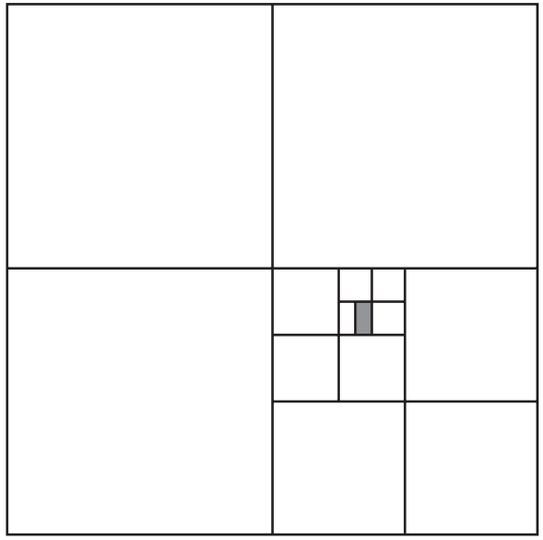


Two meridional lines, ordained as future state lines in the Northwest Ordinance of 1787.

Illinois, was fore-destined by the *LAND Ordinance of 1785,* with its choice of the Rectangular Survey system which would create a prior-to-sale, property-line framework across "the Western Lands" (Northwest Territory). Positioning of the meridional lines which would separate future states to be formed from the Territory was ordained two years later, in Article 5 of the *NORTHWEST Ordinance of 1787.*

This Article decreed that the area bounded by the Upper Mississippi, the Ohio, the western state line of Pennsylvania, and "the territorial line between the United States and Canada" should be divided by two surveyed north-south lines into thirds, each third to become, potentially, one or two states. The easternmost dividing line would be drawn "due north from the mouth of the Great Miami" (its confluence with the Ohio River). This line now serves as the Ohio-Indiana boundary, and also as the "First Principal Meridian" of the United States. The second line, which would eventually divide Indiana from Illinois, meandered with the Wabash, upstream from its confluence with the Ohio, past Vincennes, to the point 48 miles due north of Vincennes where the Wabash flowing southwest out of future Indiana first crossed the meridional line drawn through Vincennes. Here, surveys of a state-line boundary would commence, running from a monumented point on the northwest bank of the Wabash due north to Lake Michigan's southern shore.

The United States Rectangular Survey system, which directs surveys of our remaining Public Domain today, is one of the most efficient and practical means ever devised by any nation for land identification. Evolved out of the Land Ordinance of 1785, it now represents a near-perfect system for ensuring that every parcel of land surveyed, down to one-eighth of a 10-acre square (1.25 acres), has a definite description that is not duplicated. (Rayner and Schmidt, 1967)



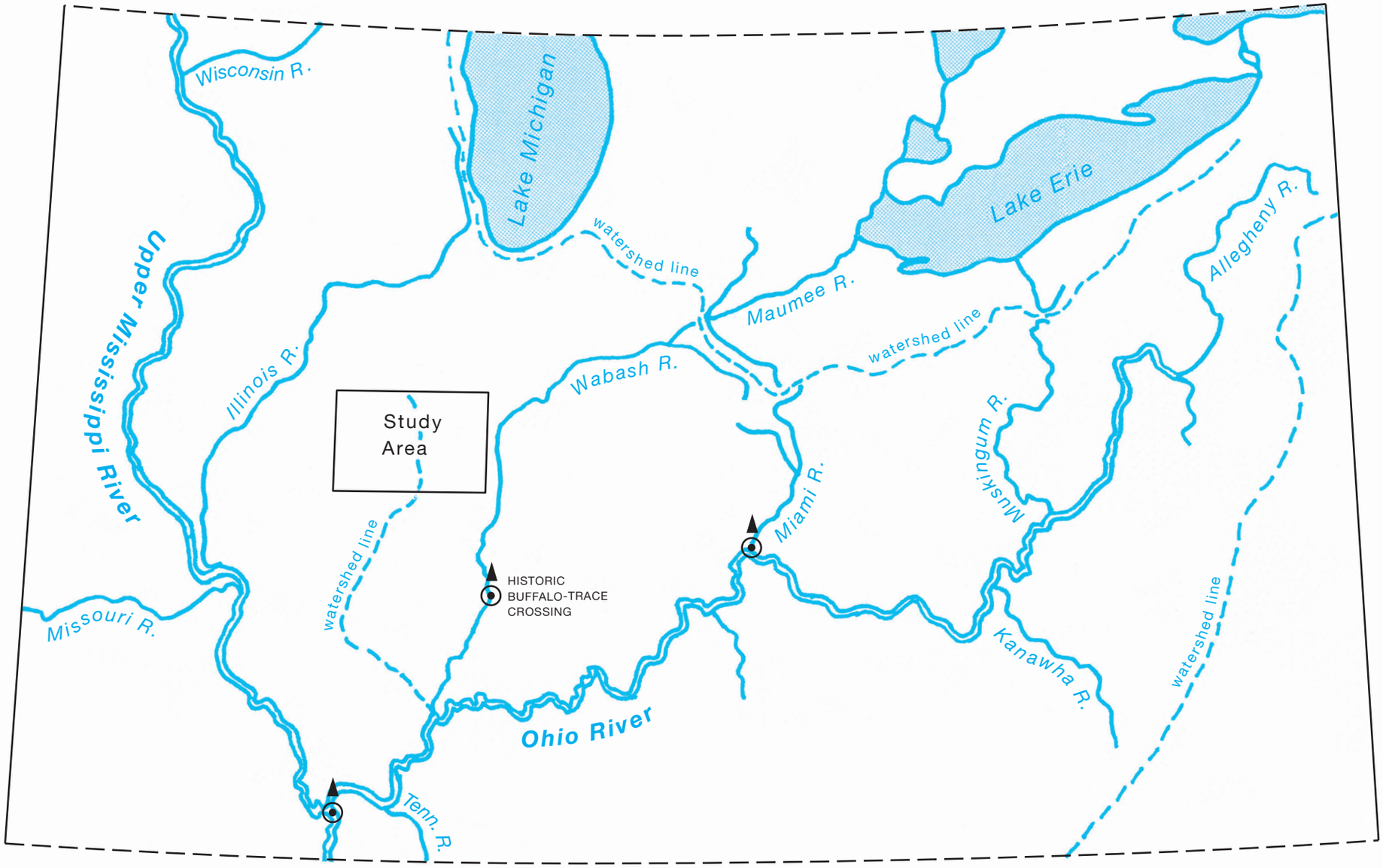
Real-estate description, uniquely identifying a 1.25-acre tract of land in a mile-square Section:

E 1/2, SW 1/4, NE 1/4, NW 1/4, SE 1/4 of Section___T___R___= 1.25 acres

Hint: to locate, read description backward, a rule of thumb familiar to incoming pioneers buying parcels of Public Land here. Starting with the largest unit—the 640-acre Section—read right to left, in smaller and smaller units, to the piece of land in question.

Landmark Waters

In the natural wilderness of the northeast Central Basin, the only reliably recognizable features useful as permanent points of reference for land measure were river-related. The First and Third Principal Meridians were set at river confluences. The Indiana-Illinois State Line began at Fort Vincennes, on the west bank of the Wabash, at the site of a major buffalo salt-trail crossing. The course of the Ohio and of the Upper Mississippi became State Lines.



The government surveyors who, in late 1785, began the unprecedented experiment of laying out a property-line framework across the lands northwest of the Ohio, operated from a far less perfect set of instructions. The writers of the 1785 Land Ordinance, which the surveyors set out to fulfill, had not anticipated some of the features needed to make a large-scale rectangular survey, across a spherical surface, work. As the surveys crept westward across the lower Northwest Territory, several fundamental concepts were evolved, step by step.

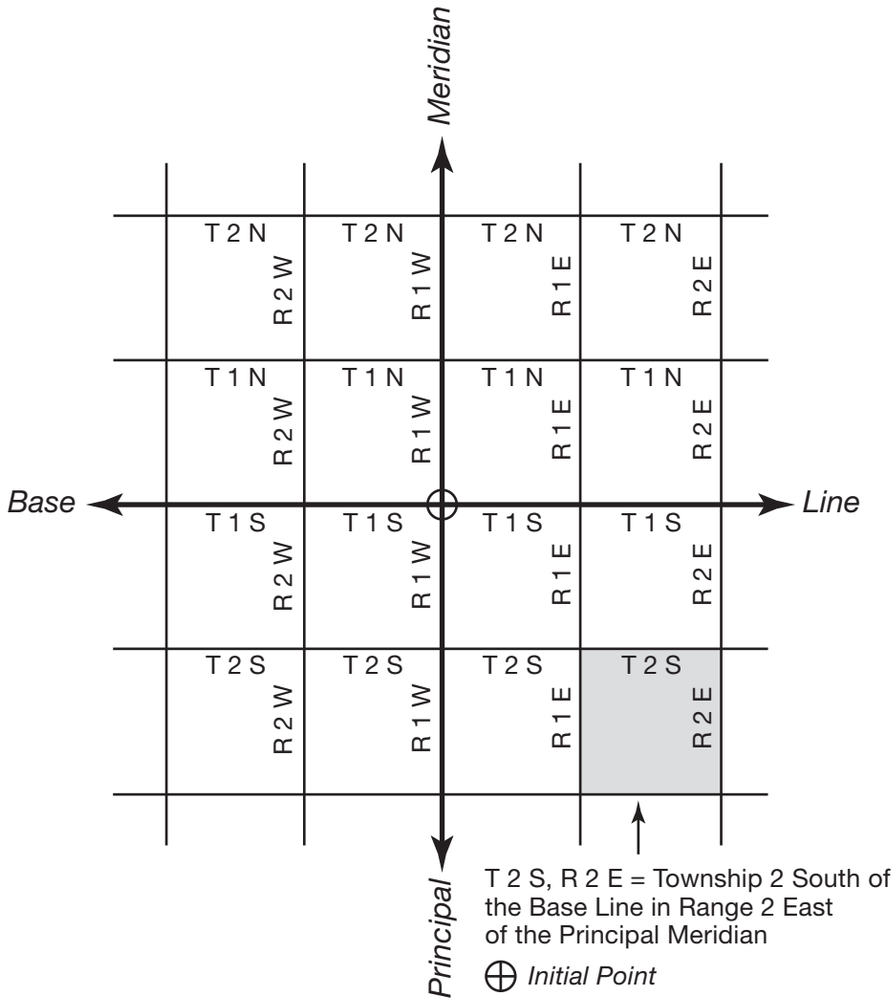
1) A north-south Meridian would be intersected by an east-west Base Line, the intersection to be named the "Initial Point." Numbering from 1 in all four cardinal directions from this Initial Point, Townships would be numbered consecutively to the north and to the south of the Base Line; Ranges (north-south tiers of the six-mile-square Townships) to the east and to the west of the Meridian.

2) A mosaic of geographically, or politically, determined survey districts would be established, rationally, as surveys progressed westward. Each district would be governed by its uniquely named Principal Meridian with associated Base Line, and the Initial Point formed by their intersection. Lines generated by surveys in each survey district would end at a natural or political boundary defining that district. *There came to be 35 Principal Meridians with associated Base Lines in the original Public Domain (more than two-thirds of the United States). These lines governed survey districts varying in size from smaller than a county, in special cases, to multi-state. Each Principal Meridian is uniquely identified. The first six are consecutively numbered, the balance, named. (See Brown and Eldridge map, page 78.)*

3) In compensation for the gradual convergence of meridian lines toward a single point at the pole, *secondary* east-west Base Lines, called "correction lines" (older term, "standard lines") would be measured anew, establishing new six-mile-wide ranges, accurate for that latitude, east and west from Principal Meridians placed at north-south intervals. Correction lines were spaced at intervals progressing northward, in the case of the Illinois surveys. At each new correction line northward, range lines measured *east* from a Meridian will be seen to jog a little eastward, westward when measured *west* from a Meridian, since the range lines intersecting the correction line from the south have converged.

These concepts, which remain in effect to this day, were not all fully implemented until surveys reached the northeast corner of our own study area, in 1822, as shown opposite.

Future Ohio, first in line going west from the Pennsylvania state line, became the ultimate trial-and-error proving ground for the system. Starting with the proposed, prototype "Seven Ranges," Ohio's patchwork mixture of survey districts (some established independently, *prior* to the Land Ordinance of 1785) are a challenge to analysis.

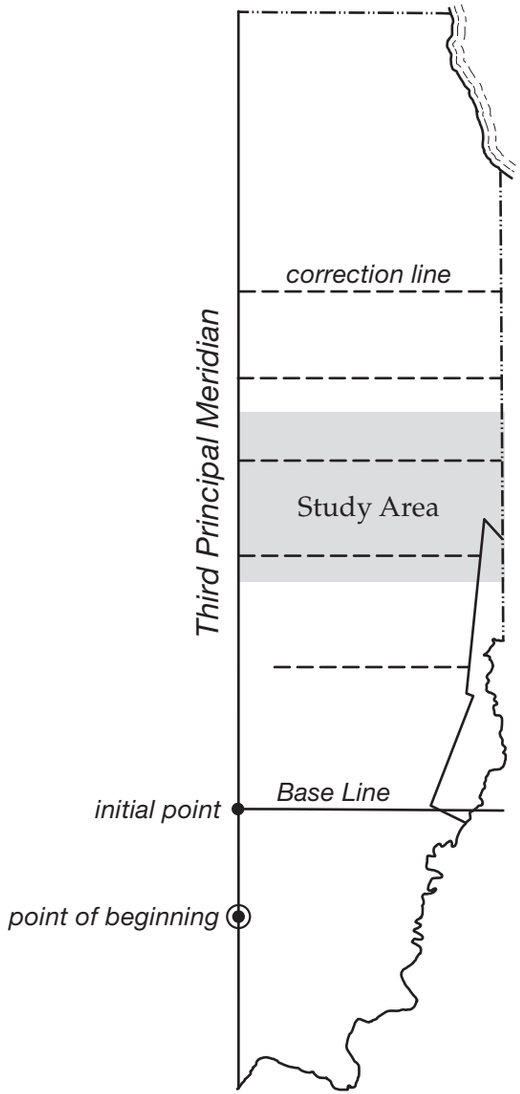


Somewhat comparable to the Cartesian coordinate system (X/Y) which locates POINTS on a flat plane, in four directions from a "Point of Origin," the American Rectangular Survey, instead, locates units of AREA (6-mile-square townships) counting in the four cardinal directions from an "Initial Point."

A TOWNSHIP is an actual tract of land, tagged with the number it bears in a consecutive count north or south of a Base Line. A RANGE is the Location of a north-south Tier of Townships, as counted east and west from a Principal Meridian.

IN 1796, WITH FRONTIER LIFE in the Northwest Territory reasonably pacified by agreements reached with the

Historic First Full Correction Lines



The correction-line strategy of the innovative American Rectangular-Survey system comes to its maturity with the two full correction lines across the east-central Illinois study area.

native population in the 1795 Treaty of Greenville, Congress reviewed and revised the Land Ordinance of 1785. Proposals aimed at increased reliance on natural features in setting boundaries were rejected, except in the case of major rivers. A Federal Land Office was established which would operate under the direction of a "Surveyor General of the United States."

With this Ordinance, which passed Congress in the spring of 1796, "the rectangular system of surveying the public domain was accepted as a permanent part of our national land system." (Webber)

A non-traditional feature of the American system was the rule that sole rights to disposal of Public Lands belonged to the Federal Government, and not to the states within whose boundaries Public Lands might lie.

The first Surveyor General of the United States, Rufus Putnam (serving 1796–1803), had been Washington's aide during the Revolutionary War. An able surveyor, Putnam struggled with the many problems of the Ohio Surveys and set the first guide-meridian on a future state line (west boundary of Ohio), as Jefferson proposed.

Jared Mansfield, scientist, scholar and surveyor, succeeded Putnam in 1803, a year made significant by admission of Ohio to the Union, by the Kaskaskia Purchase, and by the Louisiana Purchase. Mansfield's activities were subject to the approval of, or were initiated by, the much involved Secretary of the Treasury Albert Gallatin, who, besides watching expenditures, pressed for early completion of the public land surveys, in order to promote the land sales which would bring revenue to the war-debted federal government.

The confusing Ohio surveys were self-contained within the state's borders, except for the thin triangular wedge along the southeastern border of Indiana ("the Gore") specified in the Treaty of Greenville.

We imagine the newly appointed Surveyor General of the United States contemplating "Indiana Territory" (the remainder of the Northwest Territory west of Ohio after that state was admitted to the Union) and pondering the prospective twin states that would become Indiana and Illinois. He decided to reject Jefferson's plan in which *state lines* would serve as control lines for numbering of ranges and, convincing Gallatin to concur, decided to designate placement of a "Principal" Meridian (as he eventually coined the term) within the body of each of the two future states.

In today's perception, these two north-south lines are crossed and connected, nominally, by a single east-west Base Line serving both states, and running from the one-time Clark's Grant on the Ohio River at the southeast boundary of Indiana, westward to the Mississippi River near St. Louis. Along this nominal Line lie the twin Initial Points of Indiana and Illinois, where the Principal Meridian of each of the two states intersects the mutual Base Line.

Mansfield's task was to locate three points in the field which would anchor permanently these three lines: the north-south Meridians bisecting Indiana, and Illinois; and the east-west Base Line which would cross both of them. It would not be a simple task in an unmarked wilderness, which, for the most part, was as yet unceded by native inhabitants.

A reasonable starting point for the proposed guide meridian dividing the western-most state (future Illinois) would prove easy to select. It was seen that a meridional line drawn due north from a permanent, notable, landscape feature, the collection of waters of the Great River Fork at the confluence of the Ohio with the Mississippi (see the glacial history segment in Part 1 of this volume), would approximately bisect the future state. Moreover, in 1803, the year that Mansfield took office, terms of the Kaskaskia Purchase were releasing, for survey, the *course* of the proposed meridian, halfway up the future state. *This "Third Principal Meridian" bounds our chosen study area, on the west.*

Positioning of the proposed guide meridian (eventually named the "Second Principal Meridian") designed to bisect future Indiana, and of its intersecting Base Line, proved a more difficult task. The only foothold that the U.S. government had in the area was a land cession

described vaguely in the 1795 Treaty of Greenville as "the post of St. Vincennes on the river Wabash, and the lands adjacent, of which the Indian title has been extinguished." *(Vincennes had been established by the French in 1732 as a strategically-placed fort where a major trail originating as a buffalo salt trail forded a major transportation river.)*

President Thomas Jefferson granted authority to William Henry Harrison, Governor of the Indiana Territory, to negotiate a treaty with area Natives that would more precisely define boundaries of the tract of ceded land around Vincennes.

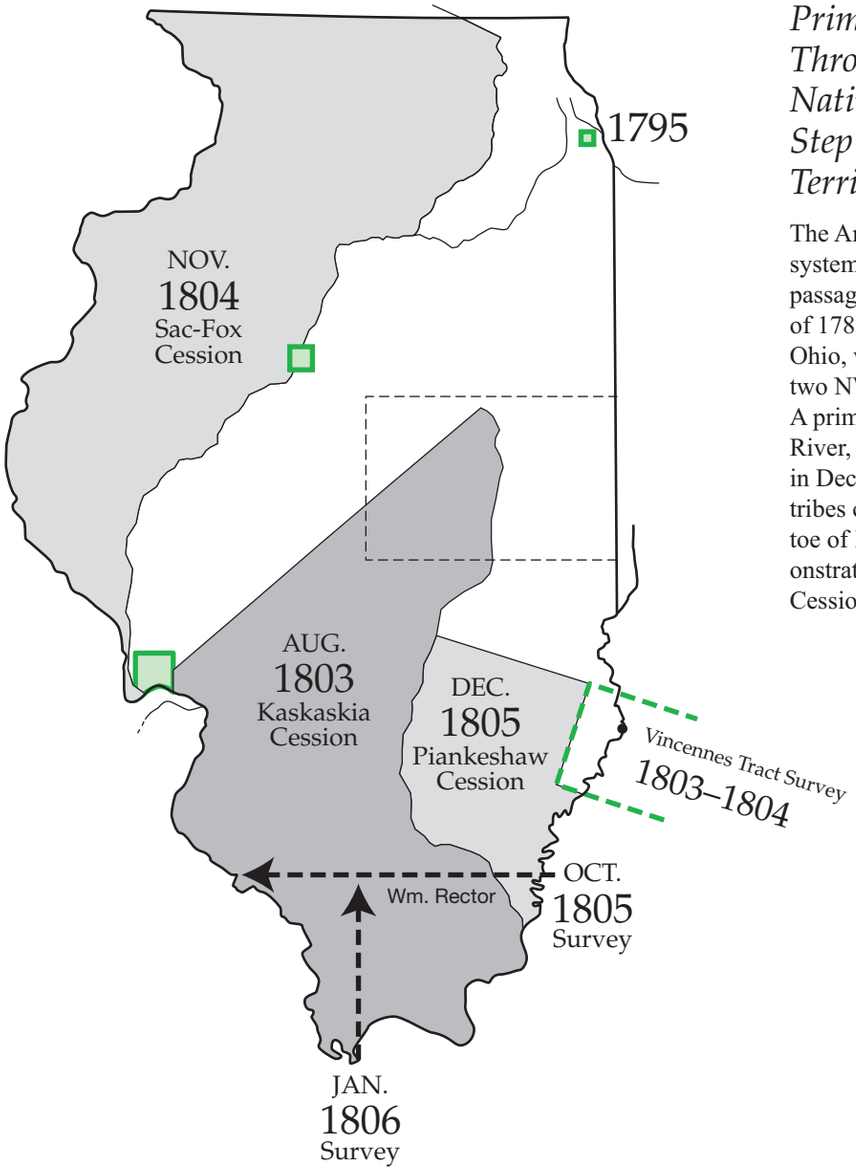
The ensuing Treaty (1803) designated a rectangle of land, perpendicular to the course of the Wabash River at Vincennes, its long dimension tilted 12 degrees at a NW to SE angle, jutting a short way into Illinois.

Surveyor Thomas Freeman was sent in to survey and finalize the tract's legal boundaries.

The procedures were complicated, and included the setting of a (now forgotten) Surveyors' Point of Beginning within the Tract. An east-west line through this point became the Base Line for the Second and Third Principal Meridians. A point measured east two Ranges (12 miles) from the now-forgotten Point of Beginning determined the location of the Second Meridian which bisects Indiana, runs north and south through the Northeast corner of the Vincennes Tract.

The precise location of the Surveyors' Point of Beginning in the Vincennes Tract, along with the point at the Ohio-Mississippi confluence, determine legal land descriptions in most of Indiana and about two thirds of Illinois.

Throughout Jared Mansfield's tenure as Surveyor General (1803–1814), Indian land cessions and U.S. land surveys in the lower Northwest Territory progressed *interactively.* Establishment of a surveyors' point of beginning within the Vincennes Tract in October, 1804,



Treaty of Greenville, 1795

The Kaskaskia Purchase, 1803
(ceded later (1816) by 3 other tribes)

Prospective "Vincennes Tract" around old French trading post
of St. Vincennes, ceded to U.S. in Treaty of Greenville, 1795

1805 Piankeshaw cede area between Vincennes Tract & Kaskaskia Purchase
1804 In Illinois, Sac + Fox cede area between Illinois-Fox R. & Mississippi R.

Primary Survey Lines Race Through Newly Ceded Native Territory: The First Step in Transforming Hunting Territories into Real Estate

The American Rectangular Land Survey system, conceived in May 1785 with the passage by Congress of the Land Ordinance of 1785 and applied trial and error in parts of Ohio, was refined westward across the other two NW Territory states, Indiana and Illinois. A primary survey line reached the Mississippi River, western limit of the NW Territory, late in December of 1805, just as Piankeshaw tribes ceded the last lands that would free the toe of Illinois for full survey. This map demonstrates the rapidfire succession: Native Land Cession to Rectangular Land Survey.

had been preceded, barely, in August, by treaties through which the United States purchased, mainly from the Piankeshaw and the Delaware, the "toe" of future Indiana—between Clark's Grant and the Vincennes Tract, extending south and west into the land bounded by the Ohio and the Wabash Rivers as they converged to confluence.

The following March (1805), Secretary of the Treasury Gallatin informed Surveyor General Mansfield of plans which he wished to be implemented in the approaching survey season. Location of the meridian running north from the Ohio-Mississippi confluence (Illinois' Third PM) was finally to be established in the field, and its northward survey begun, in order to expedite surveys and the subsequent land sales in that part of southern Illinois which had been released for survey by the Kaskaskia Purchase of 1803. A measured east-west "parallel" (a latitudinal line) would be run across southern Indiana to serve the same purpose for the recent Delaware-Piankeshaw Cession-Tract. *Gallatin particularly pressed for a survey connection between the Vincennes Tract and the Mississippi River.*

To accomplish the setting of these fundamental lines—the skeletal frame from which the full Indiana and Illinois surveys would be fleshed out—Mansfield chose one of the outstanding characters of the early-survey scene, a man who would himself one day be a Surveyor General of Illinois, Missouri and the Territory of Arkansas.

WILLIAM RECTOR was the eldest of the nine sons of Frederick and Elizabeth Wharton Rector. *Seven* of the Rector sons are known to have made their permanent mark on the midwest landscape by participating, as deputy government surveyors, in the original rectangular surveys of Indiana, Illinois, Missouri and Arkansas. *ELIAS,* the second eldest, was William's reliable, right-hand man, as trusted by authorities as his elder brother. *NELSON,* when attacked and seriously wounded by Kickapoo warriors as he surveyed, made a storied escape, barely able to hold his mount as his horse carried him to safety. Brothers *SAMUEL*, *WHARTON* and *STEPHEN* surveyed (or subcontracted surveys) in Illinois and in Missouri. The other brother, *THOMAS,* is particularly known for defending William's honor in a notorious duel.

The "Surveying Rector Brothers" were characterized by John Reynolds (Governor of Illinois 1830–34), in his quaintly literary "Pioneer History of Illinois," as singularly ardent, excitable and enthusiastic; as fearless, impulsive and patriotic; of noble bearing; "large and formed with perfect manly symmetry," in brief, as *headstrong, energetic and handsome.*

The brothers had ties to earlier American (and Illinois) history. On their mother's side, the surveying Rector brothers were related to the prominent Quaker trading family of WHARTON. Samuel Wharton was a founding partner in the influential, Colonial-time, wilderness trading firm of Baynton, Wharton and Morgan. Based in Philadelphia, this import-export firm operated early trading stores in the French-origin frontier towns of Kaskaskia, Cahokia and Vincennes, the very areas in which the Rector brothers would later make their marks as surveyors of the Public Domain. Popular-history writer Dale Van Every, generalizing on the four figures he considers most active in the aggressive quest for fortune in western lands in those early times, names two national icons: George Washington and Benjamin Franklin; and two trading giants: George Croghan and Samuel Wharton! The Wharton drive and ambition may have been a guiding family ideal which the surveying Rector brothers sought to emulate!

In the survey season of 1805, William Rector began implementing Gallatin's directives to Mansfield, by *preparing* future Indiana west of the Second PM and south of the primary Base Line (the toe of future Indiana) for future division into sales-ready, section-partitioned townships. He first ran a line south, from the *surveyors' point of beginning* in the Vincennes Tract to the Ohio River, monumenting township and section corners along the way. He thereby determined the *latitudes* of all the *east-west* grid lines between future townships of the area.

Returning north along the line to the point dividing the 5th township south of the Vincennes-Tract Base Line from the 4th township, Rector ran a monumented east-west line between the Ohio River, near its intersection with the Second PM, and the Wabash River, thereby setting the *longitudes* of the *north-south* grid lines which would separate the numbered tiers of townships called "ranges."

In July 1805, William Rector accomplished the housekeeping chore of marking out the northern boundary of the August 1804 Delaware-Piankeshaw Cession, which had been designated in the Treaty as paralleling an existing trail between the Falls of the Ohio (Louisville on the Kentucky side) and Vincennes on the Wabash. But the very next month, on August 21st, a treaty signed at Grouseland—the territorial governor's mansion at Vincennes—by Delaware, Wea, and Eel River Miami Indian tribes, made this surveyed line redundant, by extending the public domain northward of the line, and eastward to connect with "the Gore" and the Ohio surveys.

Finally, in October, William Rector and his survey crew commenced the historic survey which would link the Indiana-area surveys (and points east to the Atlantic) on westward to the Mississippi River, beyond which the Louisiana Purchase, of two years prior, had stretched U.S. Lands all the way west to the distant Rockies. For the U.S., this survey would knit together the east and west halves of the Great Central Basin.

Rector stair-stepped his monumented surveys south to the line between Townships 6 and 7, then west, reaching the Wabash River within the west end of Range 14 (West of the 2nd PM). Hopping the line across to the opposite shore of the Wabash, he began, on October 11th, a staked but *unmeasured* guideline, westward, across the short

stretch of Piankeshaw land, then across the full breadth of the Kaskaskia Purchase of two years earlier. On October 24th, he reached the Mississippi near the mouth of the Kaskaskia River, and the century-old town of Kaskaskia built on that river's delta into the Mississippi, the town to which the Baynton, Wharton and Morgan trading firm had first delivered a trade-goods cargo in 1766, nearly 40 years earlier.

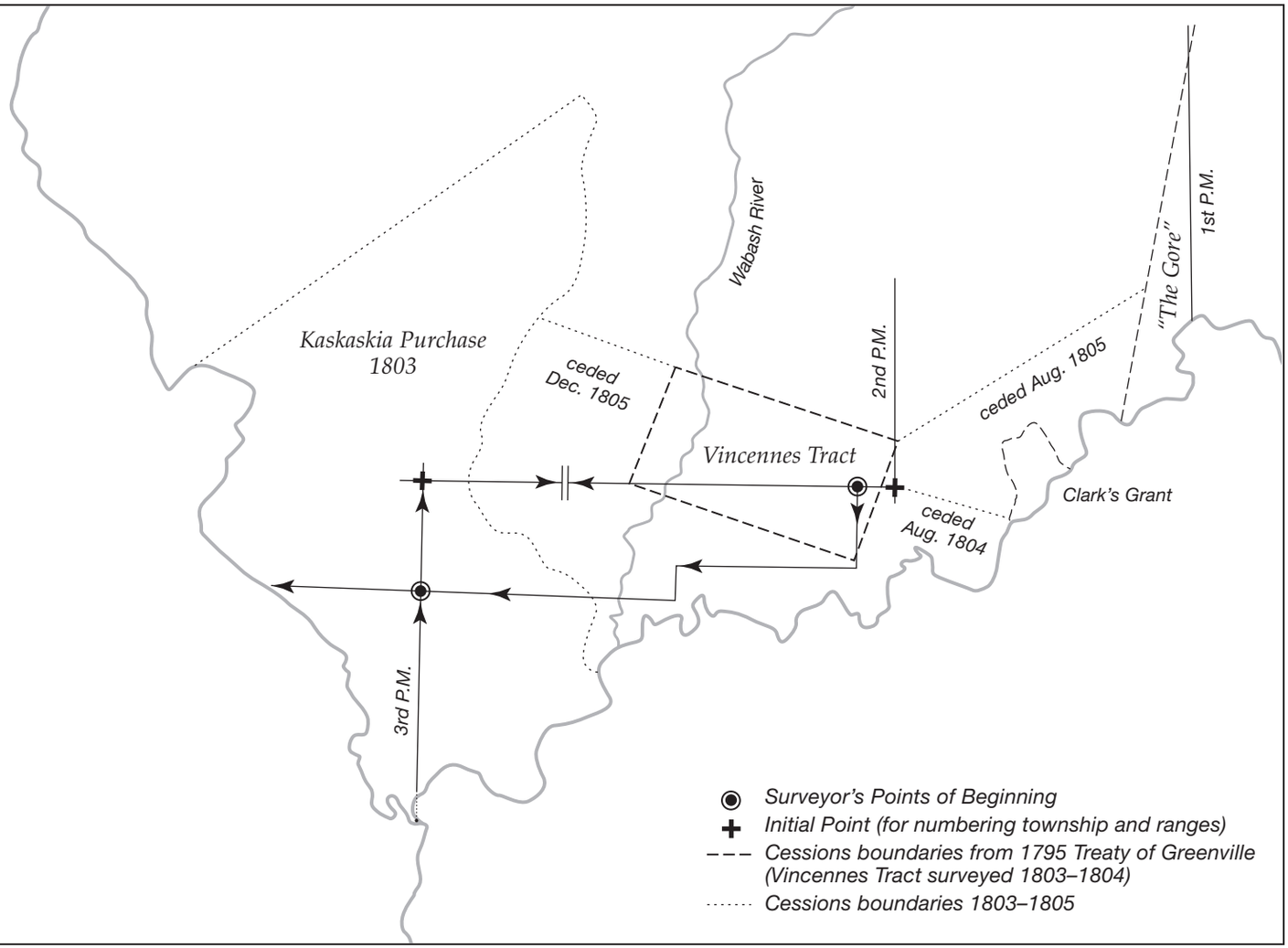
Secondary sources do not suggest that the fundamental-line survey across southern Illinois may have been purposely directed so that the proposed connecting line should reach the Mississippi at such a propitious point, but the exact latitude of strategic Kaskaskia would have been well-known, for the century since its formal founding by the French in 1703.

William Rector then traveled, in the dead of winter, to join other members of his crew, at the mouth of the Ohio River into the Mississippi, where, on December 28th, they determined the longitude of the proposed guide meridian by setting a monument on a diagonal spit of land jutting southeast into the mixing of those waters draining from the northeast watershed of the Rocky Mountains with those from the northwest watershed of the Appalachians.

Where Real-Estate Descriptions Begin

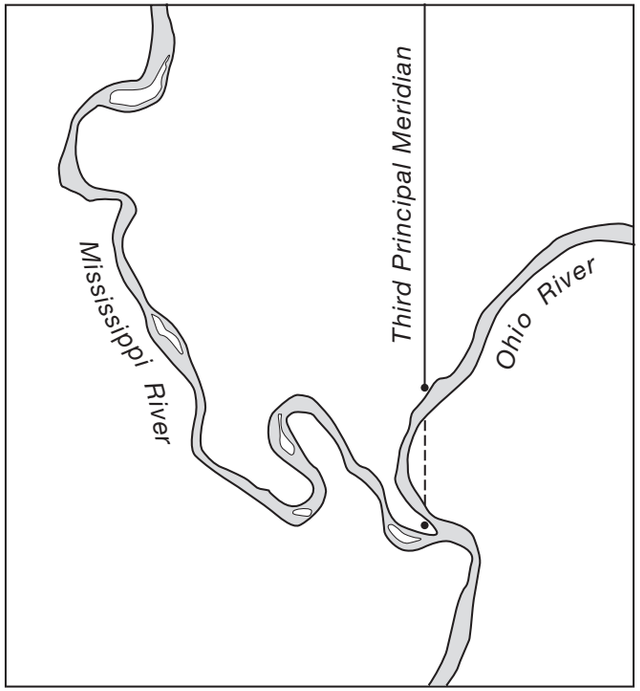
Today's real estate in 1) All of the State of Indiana with the exception of a thin wedge ("the Gore") along its eastern border, and in 2) About five-sixths of the State of Illinois (all Illinois land east of the 3rd Principal Meridian as well as west of the PM but south of the Illinois River) was originally compass-directed and chain-measured continuously—in direct or roundabout ways—from one or both of two primary points shown on this map: the Surveyors' Point of Beginning in Indiana and the point at the mouth of the Ohio River into the Mississippi that was chosen as the beginning of the Third Principal Meridian.

Township and range numbers identifying property in today's deeds (for property within the above area) are counted, east and west, north and south, from one or both of the two Initial Points shown (✚), each of which was set by measures, ultimately, from one or both of the two primary points.



Until the guide meridian extending north from this spot had been formally designated "the Third Principal Meridian," surveyors, in their Field Notes, called it simply "the meridian from the mouth of the Ohio." Add-on surveys, directed due north from this point, were destined to reach the Wisconsin border thirty years later, in effect dividing the state of Illinois up the middle.

The survey party could not begin setting a surveyed line on *land,* north from the monumented confluence, because the Ohio River swerves temporarily westward on its approach to the meeting of the waters. Thus, Illinois' Third Principal Meridian actually enters the State from a point on the northwest bank of the Ohio several miles due north of the monumented confluence. And it was from this spot that Rector's party began running a staked but not measured guideline northward. The south-to-north line intersected Rector's recently established east-west guideline on January 6, 1806 (Webber 1981). This intersection became the surveyors' true *point of beginning* for all Illinois surveys governed by the Third PM. During the last half of 1805 into the first week of 1806, then, William Rector had connected the Vincennes-Tract *surveyors' point of beginning* with its companion point for the future Illinois surveys, on the west side of the Wabash.



West of the Third PM (up to the Illinois River) and *East* of the Third PM (excluding some areas along the Wabash), Illinois real estate is in fact measured continuously from *this* intersection. The legal Initial Point for *numbering* townships and sections in the survey district was set several years later, 36 miles north on the Third PM, lining up latitudinally with the Indiana Initial Point (and Base Line). The connecting Base Lines of the two systems (after some adjustments) became a nominally mutual Base Line for both systems.

No county line road leads to Illinois' historic *surveyors' point of beginning,* now the northeast corner of Jackson County. Surrounded by private property just east of the Little Muddy River, about 15 miles north of Carbondale, the site is unmarked and forgotten, just as is the Vincennes-Tract *surveyors' point of beginning* for the Indiana surveys.

WILLIAM RECTOR did not pause when this primal intersection point had been achieved on January 6, 1806, but began at once to measure and monument township and section corners back eastward along his originally unmeasured guideline. Reaching Saline Creek on January 9th, Rector continued eastward, without the previous approval of Surveyor General Mansfield, and apparently against his intention at the time that township numbering should continue consecutively west from the Second PM toward the Third PM. Rector completed measure of the "fundamental Base Line" on eastward, through Range 10 East of the Third PM—the last full range west of the Wabash crossing—before calling a halt to the much-prolonged 1805 survey season.

Survey of fractional R 11 E, up to the west bank of the Wabash, was completed a year later by Elias Rector. In subsequent surveys northward, the curious, fractional R 11 E was retained, through and past our study area, jogging a little east with each correction line, a sort of fossil reminder, extended far north, of the Wabash River crossing on the line between T 6 and T 7 south of the Vincennes-Tract Base Line. (More on this interesting anomaly will be explored in a later segment. See Collision Zones, pages 101–102.)

Perhaps partly because of long-distance wilderness communication problems, the take-charge William Rector had employed surveyors on his own, additionally irking Mansfield, who in some cases had already contracted with other surveyors to do the same work. The Surveyor General ordered Rector to limit his assistants to his brother Elias (which could have been just the beginning of the Rector nepotism scandal of later years?).

That year (1806) some of the Rector brothers brought their families to settle in old Kaskaskia, soon to be the seat of government for Illinois Territory, 1809–1818, where they remained for several years before moving on upriver to St. Louis, about 1813.

Meanwhile, in 1800, four Government Land Offices—three on the Ohio River, one on the Scioto, all in the then-future state of Ohio—had opened to conduct land sales. It was in that same year that an Ordinance, regulating land offices and instituting measures intended to encourage sales, passed Congress. Two Indiana land offices commenced selling land, in 1806 and 1807; two in Illinois in 1814 (a year after Gallatin's term ended!). The fruits of the lower Northwest Territory surveys—revenues—were finally reaching the U.S. Treasury.

William Rector next signed contracts to fill out and subdivide into sections the township grid covering much of southern Illinois south of the Fundamental Base Line. These surveys would also involve him in locating, by survey, boundaries of old French grants, titles to which were respected by the U.S. It was a project that would occupy Rector for several years.

The War of 1812 with Britain, and the parallel, then merging, U.S. conflict with Natives led by Pontiac, somewhat curtailed surveys in the lower Northwest Territory, 1812–1815. Several of the Rector brothers left off

dangerous, native-harassed surveys, to serve their country in battle. WILLIAM commanded a regiment as colonel, in an 1812 campaign against Natives at the head of Peoria Lake. NELSON acted as an aide-de-camp to Illinois Territory Governor Edwards in the same campaign, and, in 1814, served as captain of an armed boat that engaged the British and Indians at Rock Island. STEPHEN rose to lieutenant in a Company of United States Rangers.

JARED MANSFIELD resigned his post as Surveyor General of the United States in 1812, happy to settle down as a professor of natural philosophy at West Point. His innovations had greatly advanced American survey methods.

TIME TABLE, 1815–1840

1815	Treaty of Ghent confirms U.S. Nationhood, after U.S. defeats Britain in War of 1812
1816	William Rector appointed Surveyor General of the Territories of Illinois and Missouri (headquartered in Saint Louis)
1818	Illinois achieves Statehood
1819	Kickapoo cede their lands in study area to U.S.
1821	First Government Land Surveys in study area
1822, 1824	Parts of study area first proclaimed for sale at Palestine Land Office
1824	Oct. 18 &19. Land purchased at auction at Palestine Land Office includes purchases in future Danville area by Dan and George Beckwith
1831	Feb 19. Danville Land Office established. Local records transferred to Danville from Palestine Land Office. A land-buying frenzy begins. All arable land in or near timber in the study area is purchased by settlers or by speculators by the end of the 1830's.

By 1816, as Indiana achieved statehood, and as the United States began to sense the magnitude of its future with the British challenge finally neutralized, Mansfield's former post had been divided into District Surveyor-Generalships. Edward Tiffin, who had been serving as Surveyor General of the United States, became Surveyor General of Ohio, Indiana and the Territory of Michigan. And the energetic William Rector was named by Congress to be Surveyor General of the Territories of Illinois and Missouri, with headquarters in St. Louis! (His title would change when Territories became States.)

In that year, William Rector built a mansion in St. Louis, a few blocks from the Mississippi River waterfront. (With additions built on later, it would one day become the famed Mansion Hotel of old St. Louis.) Part of this edifice would serve as residence, part as General Land Office, with space for staff, including the township-plat draftsmen. (Brother Elias achieved the status of *Postmaster General* of St. Louis, but continued to contract for surveys, which he then subcontracted to other surveyors, at a lower pay scale!)

To the St. Louis General Land Office, in March 1821, came the men who would begin surveys of our east-central Illinois study area, after signing their contracts and being sworn in as deputy surveyors by Surveyor General William Rector.

One of these men, John Messinger, was, in a very different way, as outstanding a character of the early survey scene as William Rector himself.

SPRING 1821, EAST-CENTRAL ILLINOIS

Mathematician-Surveyor John Messinger Leads a Corps of Deputy Surveyors and Crews in Springtime Surveys East of the 3rd Principal Meridian in Central Illinois

The two men who met in St. Louis on March 14, 1821, at the General Land Office for Illinois, Missouri and the Territory of Arkansas were somewhat apart from routine surveyors of the time. Each was judged qualified to set such *fundamental lines* as Principal Meridians, Base Lines and Correction Lines, the guide lines which would govern all subsequent township-and-section-grid surveys within a defined survey district.

Surveyor General of Illinois, Missouri and the Territory of Arkansas, William Rector, then a man of about 50, had himself set such fundamental lines in southernmost Indiana and Illinois, during his active surveying years.

The two fundamental-line surveyors (to coin a term) who met in Rector's office that March were each scheduled to sign a contract to run a correction line, east from the Third Principal Meridian. These lines would span the 1821 spring survey in our study area, at a north-south separation of 5 townships (30 miles).

One, John Messinger, age 50, had earlier worked extensively in surveys of mid-southern Illinois, as Rector had. Messinger was further qualified by having been entrusted in 1815, six years prior to the March meeting, by (then United States) Surveyor General Edward Tiffin to set the *Fourth* Principal Meridian and its Base Line, which were to govern the U.S. Military Bounty Lands of northwestern Illinois. Surveyor Joseph Borough, newly elected (1820) to the second State Legislature of Illinois, had also been chosen to participate in the 1821 fundamental-line surveys.

In the March 1821 meeting in St. Louis, Messinger contracted to lay out and monument section and township corners for the Correction Line which would run due east from the Third PM, along the bases of the prospective Townships 16 North of the Base Line. His line would conclude at the boundary of the already surveyed "Harrison Purchase" (through which the state line, when surveyed, would pass). Messinger's correction line would thus determine location of the between-range lines, up to the next correction line to the north, as well as serving as base line from which east-west township lines would be measured northward. With completion of his correction line, Messinger was then to set the exterior lines, and subdivide into sections, two townships *north* of the *next* correction line, which by that time would have been set

by Joseph Borough, his colleague at the 1821 meeting in St. Louis.

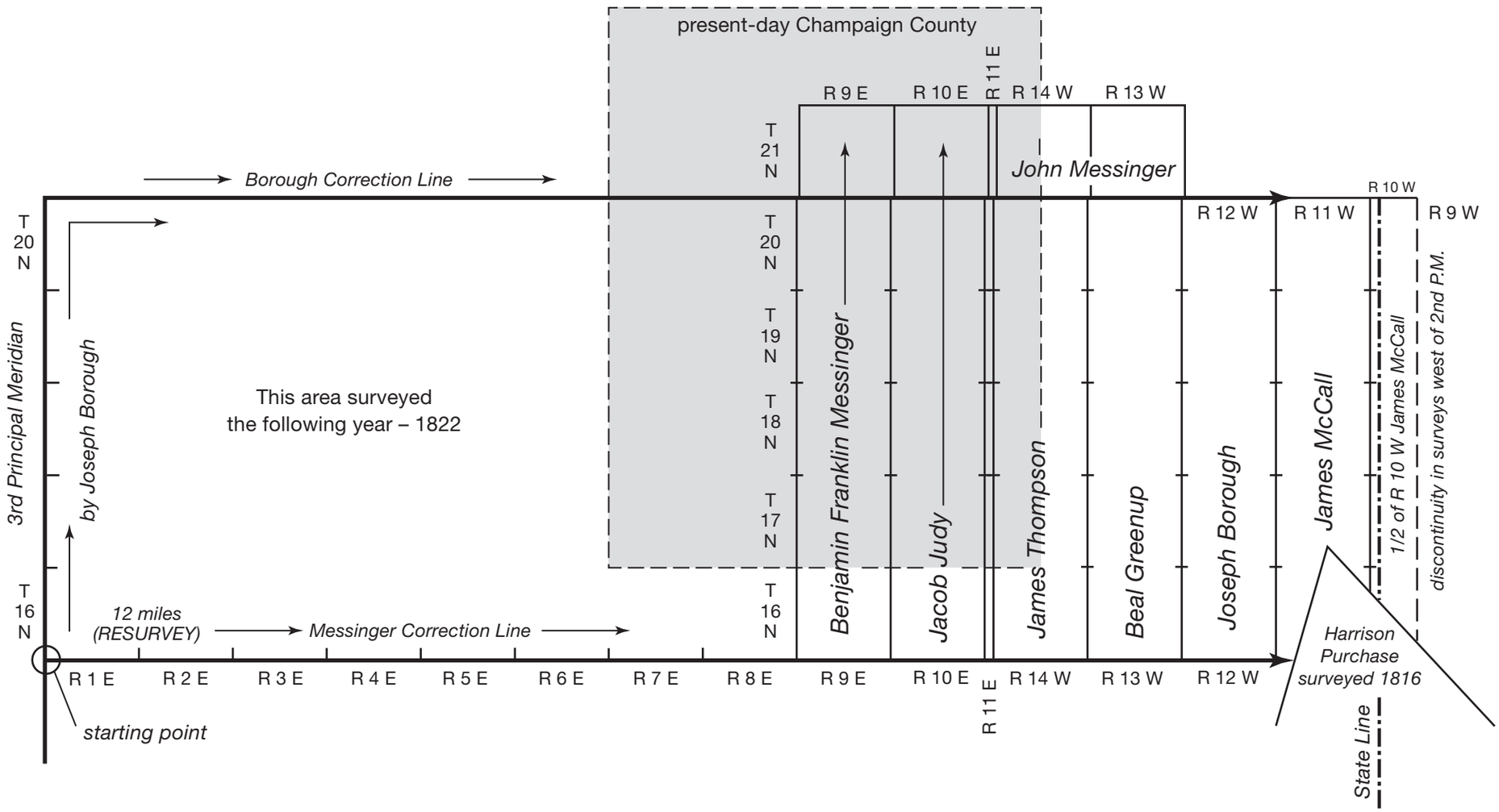
Borough contracted to run the Correction Line (called a Standard Line in his contract) along the bases of prospective Townships 21 North of the Base Line, eastward through (nominal) "Range 12 West of the Second PM," nearly to the North Fork of the Vermilion River, stopping short of the as-yet-unsurveyed State Line between Illinois and Indiana (as positioned by the 1785 Land Ordinance).

Borough would then drop thirty miles south to the by-then completed Messinger Correction Line, to set township lines and fill in section subdivisions for the tier of townships of the last Range numbered in his own correction line, back northward to that line. *Borough's contract fails to mention the necessity for extending the Third PM north 30 miles, to the starting point for his contracted Correction Line, but, in the field Borough did just that.*

The diverse credentials of one of these two 1821 fundamental-line surveyors, John Messinger, might well qualify him for the title of Renaissance Man of the Era of Landscape-to-Land Transformation of Illinois, by Rectangular Survey!

JOHN MESSINGER was born in 1771, in Massachusetts, to descendants of the Mayflower. During his boyhood, his father and some twenty other relatives fought as patriot participants in the American Revolution. As the 1783 Treaty of Paris fully legitimized the new Nation, the Messinger family moved westward to a farm on the west watershed of the Green Mountains, looking on west toward Lake Champlain. Young John spent most of his teens and twenties (1783–99) there in Vermont, where he obtained an enviable, well-rounded education.

In the realm of manual and physical skills, Messinger was trained in the art and science of farming; he mastered



fine carpentry (some of his meticulously wrought furniture pieces survive); and he learned and later practiced the craft of the millwright. In the realm of the mind, he became a learned scholar of classic English literature, collecting an extensive library over his lifetime. But his passion was for mathematics. Young John studied under William Colt, and in the process mastered the sciences of astronomy and of land surveys. In later life, it was said of John Messinger that "he was always delighted by search of some abstruse problem in mathematics."

A modest, unassuming man, characterized by Illinois Governor John Reynolds as "not large in his person, but compactly built, hardy and very energetic," John Messinger married a daughter of one of Ethan Allen's wartime Green Mountain Boys—Matthew Lyon, an ardent supporter of Thomas Jefferson, and a four-term member of the U.S. House of Representatives.

In 1799, members of the extended Lyon family, with the encouragement of Matthew Lyon's friend Andrew Jackson, traveled down the Ohio River to establish a rich plantation in western Kentucky. John and Anne Lyon Messinger accompanied her family, but stayed in Kentucky only a few years, since both John and Anne were opposed to the institution of slavery, then a part of the Kentucky lifestyle.

By about 1806, John and Anne Messinger were owners of a productive farm, nineteen miles east of the American Bottom town of Cahokia, and within easy travel distance of St. Louis across the Mississippi. Then still part of Indiana Territory, "Clinton Hill" would become their permanent home.

John signed up for the 1807-season government surveys and worked extensively in his own area and in the Kaskaskia Purchase area. Elected to the legislature of Indiana Territory in 1808 as a representative of St. Clair County (at that time two-thirds of the future state of Illinois), Messinger worked toward division of Illinois Territory out of Indiana Territory, fighting successfully to keep the new Illinois Territory (and later the state of Illinois) free of slavery.

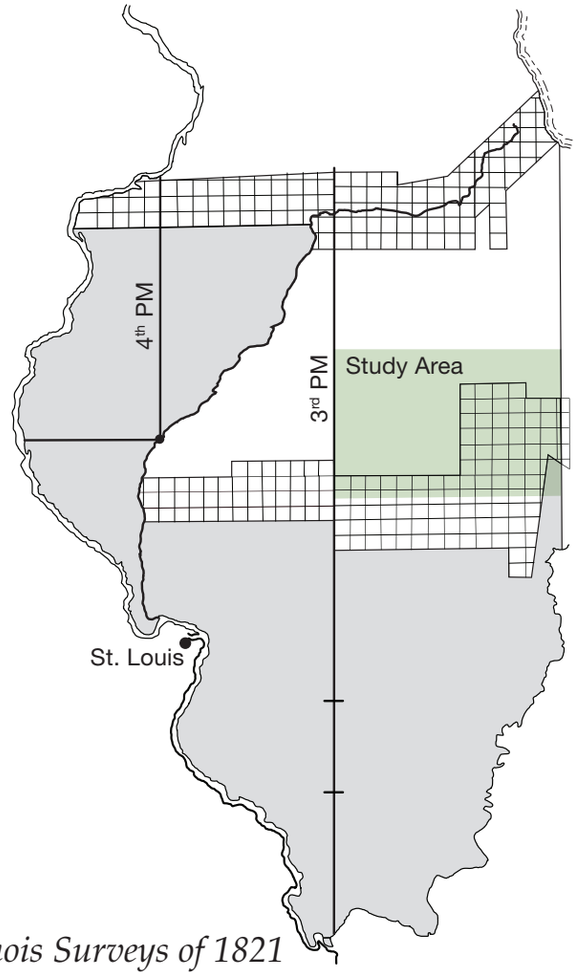
With the end of the War of 1812, Messinger was hired (1815) to set the Fourth PM and Base Line, as described above. He then proceeded, 1815–17, to survey lands in the U.S. Military Tract controlled by those lines. Land sales for the Tract commenced at the Edwardsville Land Office in 1816. Soon, wagonloads of settlers bearing service-pay, Land-Bounty certificates rolled across the intervening, as-yet-unsurveyed, wild prairie, on their way to establish farms beyond the Illinois River.

When Illinois statehood was achieved the following year, 1818, Messinger was chosen as one of the 33 delegates to Kaskaskia, seat of government of the new state, to draw up the Constitution of the state of Illinois. Elected a member of the first Illinois House of Representatives, Messinger was chosen Speaker of the House.

Three years later, in 1821, John Messinger published a pocket-sized book, "A Manual; or handbook intended for convenience in Practical Surveying," for use in the field. *(A well-worn copy, along with his memo book of surveying notes, may be examined in the Messinger Papers at the Illinois Historical Survey Library, University of Illinois Library at Urbana.)*

And it was in this very year that this more-than-distinguished leader chose to resume surveying, in order to take part in spring surveys in our east-central Illinois study area.

John Messinger, the scholar, was also a lifelong, enthusiastic teacher. He taught adult pioneers of his neighborhood to read and write, and lent books from his library. In particular, he taught many young people, including son Benjamin Franklin Messinger, the sciences of mathematics and surveying. Benjamin turned 21 in the year of the 1821 east-central Illinois surveys. Of the corps of five survey teams, each of which would survey one tier of townships north from the correction line that John Messinger was about to set in east-central Illinois that spring, one was led by son Benjamin, perhaps the motivation for John Messinger's participation in the 1821 surveys.



Illinois Surveys of 1821

Areas surveyed before 1821

Areas contracted for survey in 1821

Areas surveyed after 1821

This diagrammatic map shows the 1821 surveys as a grid. Areas surveyed before 1821 are shaded. Besides advancing the central Illinois surveys northward in 1821, the St. Louis Surveyor General, William Rector, chose to connect Lake Michigan with lands already surveyed in the Military Tract, by ordering surveys on either side of the Lake Michigan/Illinois River waterway and canal. Proceeds from sale of these lands were expected to pay for construction of the canal, a strategy used later to pay for railroad construction. Sources: Ladislav Matousek, "Map of the Government Surveys of the State of Illinois. . . ," 1971; and Joe Webber, "Early Public Land Surveys in the Northwest Territory," 1981.

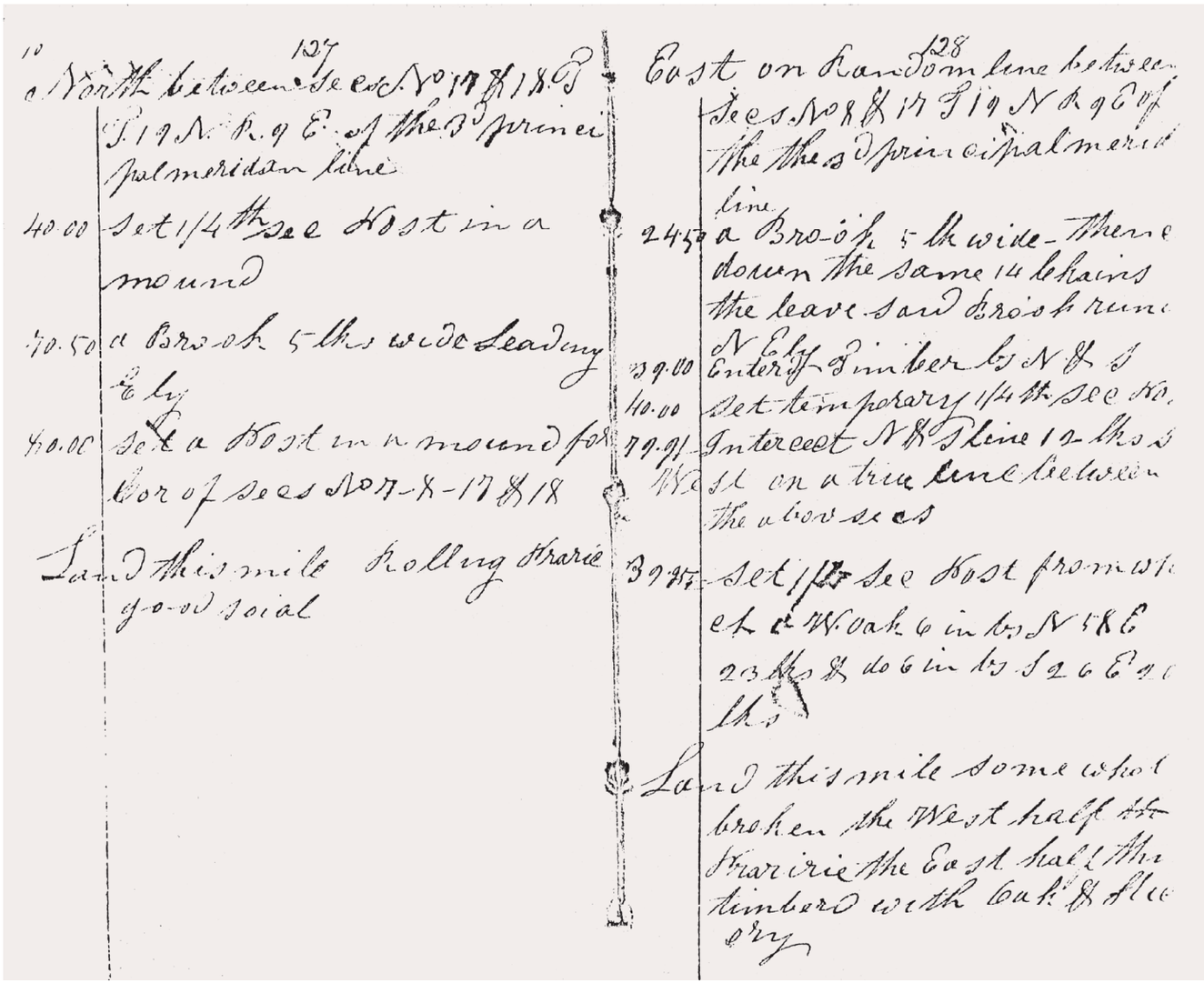
John Messinger's life of high achievement continued. At the age of 60 he served in the Blackhawk War. In 1832–33, he represented the state of Illinois in survey of the Illinois-Wisconsin border on the 42°30′ parallel, from the Mississippi River to Lake Michigan. In 1835, with John Mason Peck, Messinger produced the first complete map of Illinois showing all the (nearly completed) township lines. Peck, who had founded the Rock Spring Seminary in 1827 (possibly the first institution of higher learning west of the state of Ohio), invited Messinger to serve as a Professor of Mathematics at that institution, which he did for a time. Meanwhile, Messinger, as entrepreneurial businessman, worked with gunsmith Phillip Creamer to design, produce and market a highly rated surveyor's compass.

John Messinger died in 1846, after most of those Illinois lands that he had surveyed, which were in or near timber, had been transformed into thriving, privately owned farms. He was buried beside his wife in the cemetery adjoining the little Baptist church he had built himself on his own farm soon after they had settled there.

By February 1821, Surveyor General of Illinois, Missouri and the Territory of Arkansas, William Rector, after studying maps of his domain, had planned an orderly advance of surveys to be undertaken during the coming season. Rector had thoughtfully partitioned into reasonably sized parcels, of several townships each, the lands to be surveyed, and had prepared to contract those parcels out to individual deputy surveyors and their crews, for subdivision in the field.

In our study area, the individual survey parcels that Rector delineated tended to consist of a tier of five or six townships in a single range, consecutively north from the correction line which he was scheduling to be run, in advance, along the bases of Townships 16 North of the Base Line. Township corners monumented by the fundamental line surveyor, as he ran his assigned correction line, would serve as the points from which deputy surveyors would begin surveying the exterior lines of their assigned townships, before subdividing each into thirty-six, corner-monumented, mile-square sections.

While survey contracts might be issued at any time of year, amenable springtime was a season often favored for this arduous outdoor work (chancing the inconvenience of sometime spring floods). Pre-season-1821, from late February through March, found hopeful surveyors arriving at William Rector's St. Louis office, to apply for one of the prestigious assignments. If accepted as qualified (most were veteran surveyors already well-known to Rector), a surveyor was offered a custom-written contract, specifying the townships which he was to set and subdivide. (Copies of these hand-written contracts are available on microfilm through the Illinois


10 North between Secs No 17 & 18 of T 19 N R 9 E of the 3d Principal Meridian line
40.00 Set 1/4 th Sec Post in a mound
70.50 a Brook 5 lks wide leading E by
80.00 Set a Post in a mound for Cor of Secs No 7-8-17 & 18
Land this mile Rolling Prairie good soial

128
East on Random line between Secs No 8 & 17 T 19 N R 9 E of the 3d Principal Meridian line
24.50 a Brook 5 lk wide - thence down the same 14 lks chains the leave said Brook runs N E by
39.00 Enter Timber bg N & S
40.00 Set temporary 1/4 th Sec No.
79.91 Intersect N & S line 12 lks West on a true line between the above secs
39.75 Set 1/4 Sec Post from which set a W. Oak 6 in bs N 48 E 23 lks & do 6 in bs S 26 E 40 lks
Land this mile somewhat broken the West half Prairie the East half timbered with Oak & Hickory

Field Notes for this one-mile (80-chain) survey, north along the west side of Section 17, T 19 N, R 9 E describe the land traversed as "Rolling Prairie," and evaluate its quality for agriculture as "good soial."

39 chains into the Random line east along the north side of the Section, the surveyors "Enter Timber, bearing N & S." The mile is described as "West half Prairie, the East half thinly timbered with Oak and Hickory" (the "oak opening," fringing the denser timber of Big Grove, Urbana, Illinois).

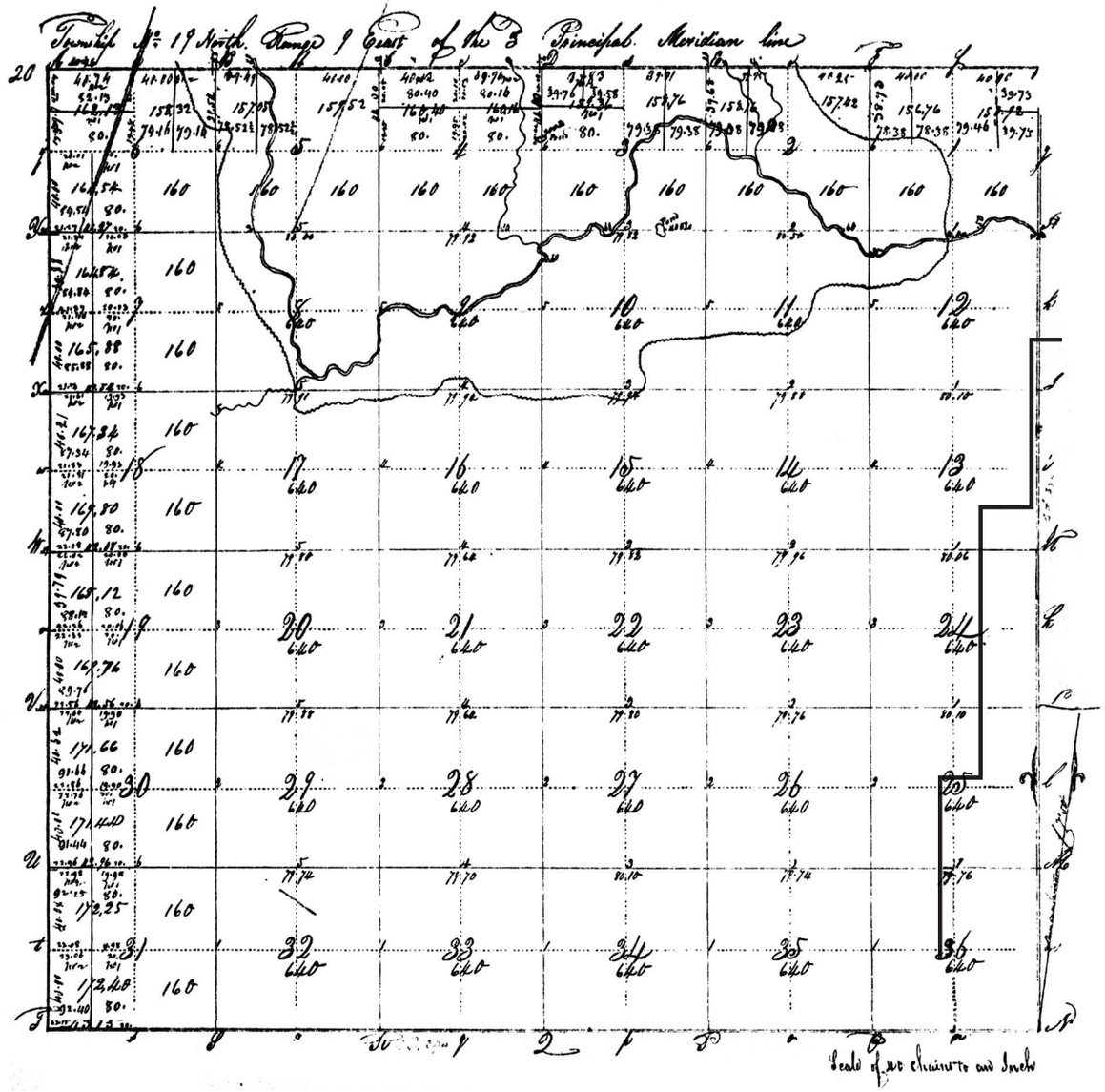
State Archives in Springfield: *Roll 38-10: Contracts with Surveyors, 1806–1855.*)

Each contract written at the St. Louis Land Office in 1821 reiterated the then-current set of rules and technical instructions. Also included were directions for evaluating, in the Field Notes, the agricultural potential of each mile-long section-side surveyed, and for placing, by measure from the last section corner set, the location of permanent features crossed by the surveyed line, as first specified in the Land Ordinance of 1785. The simple timber/prairie dichotomy of east-central Illinois invited inclusion in the Field Notes of the location of the interface boundary between these two types of vegetation—a non-permanent feature, but, considering the importance of timber to the wood-based technology of the time, a feature of real significance to potential buyers.

Fair copies of the Field Notes taken during surveys, conforming to a specified format, were to be submitted to the Land Office at the end of the job, along with translations into map form of the Notes, in the form of Township Plats. In practice, these plats turned out to be crude maps of the wilderness scene itself, its woods, grasslands, brooks, salt-licks—unprecedented world-wide in earlier times where "undeveloped" lands were being mapped. These First Township Plats—true linear samplings of an existing virgin landscape, on a one-mile grid—were accurate on the surveyed line, and filled in randomly in the spaces between the surveyed points on the grid. Soon, copies of these plats, forwarded to Local Land Offices, would be informing incoming settlers of the character of available land, which they might then purchase without even riding out to inspect, should a buyers' rush be on.

Generations of subsequent site planners and landscape architects in the U.S. have extracted useful information from these original Government Survey Field Notes and Township Plats. By supplementing the Field Notes data with modern contour-map and soil-type data, historical ecologists have made remarkably complete, you-were-there maps of survey-time landscapes.

"Township No 19 North. Range 9 East of the 3rd Principal Meridian Line"

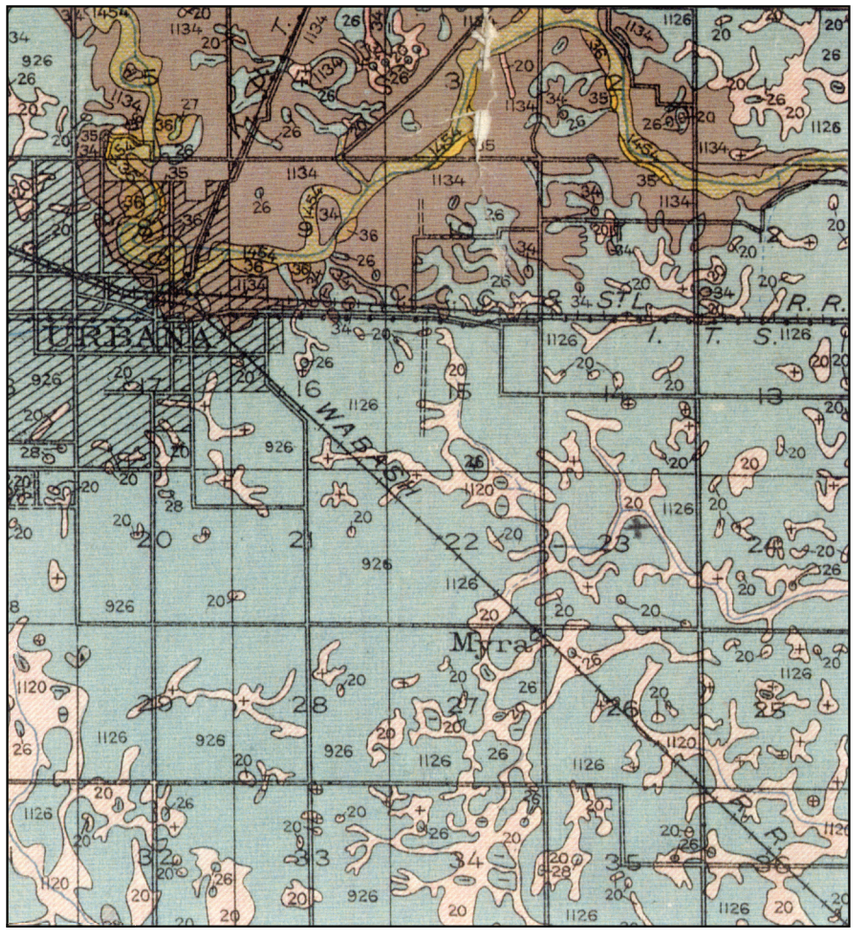


This township plat is one of the three drafted in triplicate at the end of the survey season by draftsmen at the St. Louis Regional Land Office, from survey data presented in the Government Surveyor's Field notes. This is a photocopy of the one of the three that went to the Washington D.C. office to be filed. When the railroad estimated its route, a line (here, two) was drawn at the Washington Office on this filed plat, marking the east boundary of the land to be granted to the railroad—six miles on either side of the proposed railroad route—land that would be withdrawn from sale at government land offices.

At the top of this plat, the timbered area around the bend of the river (Saline Branch of the Salt Fork of the Vermilion) is "Big Grove" of pioneer times. The town of Urbana was established at the southwest apex of the Grove.

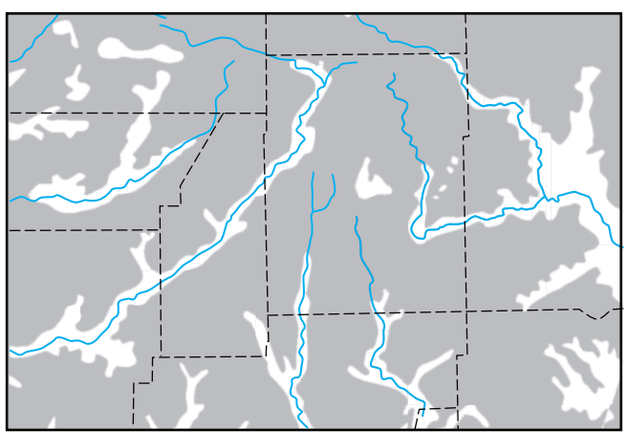
This is a reduced copy. Scale of the original is 40 chains to an inch, 80 chains (2 inches) to a one-mile Section.

How Surface-Soil Color Confirms Timber Mapped from First Surveys



This soil map of T 19 N, R 9 E is part of Soil Report No. 18, Champaign County Soils, published in 1918 by the University of Illinois Agricultural Experiment Station. At that early stage of soil classification and mapping, the simple dichotomy of soils developed under timber and those under tall grass is more easily seen than in more recent, more complexly classified soil maps. Prairie soils are shown here in light blue and pink; timber soils, in darker colors. Compare this map with the plat opposite, of the First Government Survey of the same township, for location of the "Big Grove" timber, and Urbana.

Selected data from each of these two township maps may be applied to reconstructing, in imagination, the actual landscape that an incoming pioneer of the 1830's would have looked over, as he chose the site of his future farm: The government surveyor, as he set each one-mile section line, accurately measured and recorded the location of the point where the line intersected a prairie-timber interface boundary. But the draftsman who made the plat, opposite, from the surveyor's Field Notes could only guess at the prairie-timber interface boundary between these points. We can use the timber-edge line implied in the soil map for greater accuracy, then complete this vegetation map by adding rivers and ridges from USGS quad maps, as well as gleaning any other information contained in the Notes.



Soils developed under at least a hundred years of timber growth is lighter in color, because the soil retains little organic matter, as it supports woody vegetation. Soil developed under tall, deep-rooted prairie grass is darker in color, because it retains the organic matter produced by the decay of dense prairie-grass root systems. This map of the study area is excerpted from a classic map of "Native Vegetation and Surface Soil Color in Illinois," published in 1958 by the University of Illinois Agricultural Experiment Station. The soil color reminds one of an old-fashioned film negative, light where timber shades the soil from the sun, dark in open grasslands. Note the "Big Grove" timber in the center of Champaign County.

On March 14th, fundamental-line surveyors John Messinger and Joseph Borough signed their respective contracts with William Rector, as noted earlier, and would carry the title of *deputy surveyor* for the duration of their assignments. Messinger's contract was signed "in the presence of Thomas Rector and Stephen Rector." (Counting William, *three* Rector brothers were on hand that day!) Borough's contract was signed "in the presence of John Messinger." Each of the two surveyors swore ". . . to perform the following surveying agreeable to the laws of the United States, and such instructions as may be given to him by the said William Rector. Viz: . . ." *The written instructions that followed did not include a curious instruction which was later implemented, precisely, but as if in secret, by both Messinger and Borough. Unless this instruction exists in some obscure correspondence somewhere, the unconventional instruction must have been given to the two men simultaneously, by word of mouth.* Contracts for two of the survey parcels, which ran north from corners to be set by John Messinger on his prospective correction line, had been signed the previous day, March 13th. One of these was to a Jacob Judy who had surveyed with John Messinger three years earlier. Judy's contract was signed "in the presence of John Messinger," as was the second contract, written to John's 21-year-old son, Benjamin Franklin Messinger. Contracts to James Thompson, Beal Greenup and James McCall, the three other surveyors whose survey parcels each filled a tier of townships (single range) between the Messinger and Borough correction lines, also signed their contracts during that month of March 1821.

Each of the newly sworn deputy surveyors assembled his crew—ideally, a flagman to indicate the advancing line that the surveyor's compass was sighting along; fore and aft chainmen to measure the line; an axeman to blaze witness trees, or place stone or stake monuments where there were no trees; and a campkeeper who might double as hunter. After each surveyor had collected necessary supplies, the choreographed logistics of the 1821 spring surveys in east-central Illinois began.

In late March, John Messinger and crew, likely accompanied by B. F. Messinger and crew, possibly by Joseph Borough, Jacob Judy and their crews, began the trek cross-country from the Cahokia/St. Louis area to the appointed starting point of John's correction line—the Third PM at the top of Township 15, just south of the Sangamon River timber, on the west line of future Macon County.

Fortunately, Surveyor A. L. Langham (another future Surveyor General) had finished extending the Third PM north to this point a few weeks earlier, on March 10th. (His contract of February 27th had assigned Langham the survey of the Third PM all the way north to the Illinois River, but, while he was fulfilling parts of his contract *west* of the Third PM, other surveyors had to expediently fill in for him in the Third PM survey.) Joseph Borough, reaching the site about March 28th (just two weeks after signing his contract), began extending the Third PM, on north to the top of Township 20, nearly to the Kickapoo Creek timber, from which spot he would run *his* correction line eastward.

Meanwhile, Deputy Surveyor Enoch Steen (March 3rd contract), working up from the south, in a survey of the tier of townships in Range 3 East of the Third PM, had reached the approximate latitude of Messinger's prospective correction line before Messinger had arrived to set it. Steen searched out Langham's monument on the Third PM and ran the first 12 miles of the Messinger correction line eastward himself, to connect with his completed survey.

The northernmost row of sections in Steen's survey turned out to be grotesquely elongated, due, perhaps, to some cumulative chain-length error in the long survey north, which lacked proper correction lines along the way. Such distortions validated William Rector's decision to formally institute regularly spaced correction lines, and to space them five townships (30 miles) apart, starting with the prototype Messinger and Borough correction lines in our own study area. Thenceforth, curvature of the earth was compensated for in the U.S. Surveys by regular correction lines, which would be spaced 5 townships apart in Illinois, 4 townships apart in later U.S. surveys.

Each correction line in the study area begins on the Third Principal Meridian, at the top of a Township. The survey team has measured and marked correct Range widths east from the Meridian.

Range lines coming up from the next correction line to the south have converged a little, as the circumference of the Earth decreases toward the Pole, creating offset meridional lines along the correction line. On Township roads along correction lines, section roads from the south jog eastward as they resume, north of the correction line. (See study of offsets, page 99.)

John Messinger and party reached the Third PM around March 28th to April 1st, but since the first twelve miles of his correction line had already been set, Messinger skipped over that part and started his surveyed correction line at the corner set by Steen, between Ranges 2 and 3, East of the Third PM (a couple of miles southeast of the Sangamon River bend, within which the city of Decatur would later develop). Seven miles into his survey, he unknowingly began laying what would become the course of future U.S. 36.

U.S. Route 36, between Edgar County and Macon County in Illinois, is not a highway on which one would enjoy driving west at sunset, in fair weather, at the spring or fall equinox, when the blazing sun seems to set directly in the roadway ahead. For nearly 60 miles, the roadbed laid on the correction line, which had been so flawlessly set in April 1821 by master surveyor, mathematician, state-constitution drafter, and speaker of the Illinois House John Messinger, runs perfectly straight, perfectly true east-and-west (except for one small deviation adjusting temporarily to a drainage contour). Motorists along this stretch of highway will observe a jog between sideroads coming in from the south and those from the north. Roads coming up from the south were laid directly northward, from section-line or quarter-section-line points which had been originally measured along the partial correction line 42 miles to the south (between Townships 8 and 9 North of the Base Line), while north-side roads were directed northward from new "standard" measurements along the Messinger correction line, the first complete correction line in the developing American Rectangular Survey system. The diminishing circumference of the Earth northward between the latitudes of these two correction lines shows up in the offset range lines.

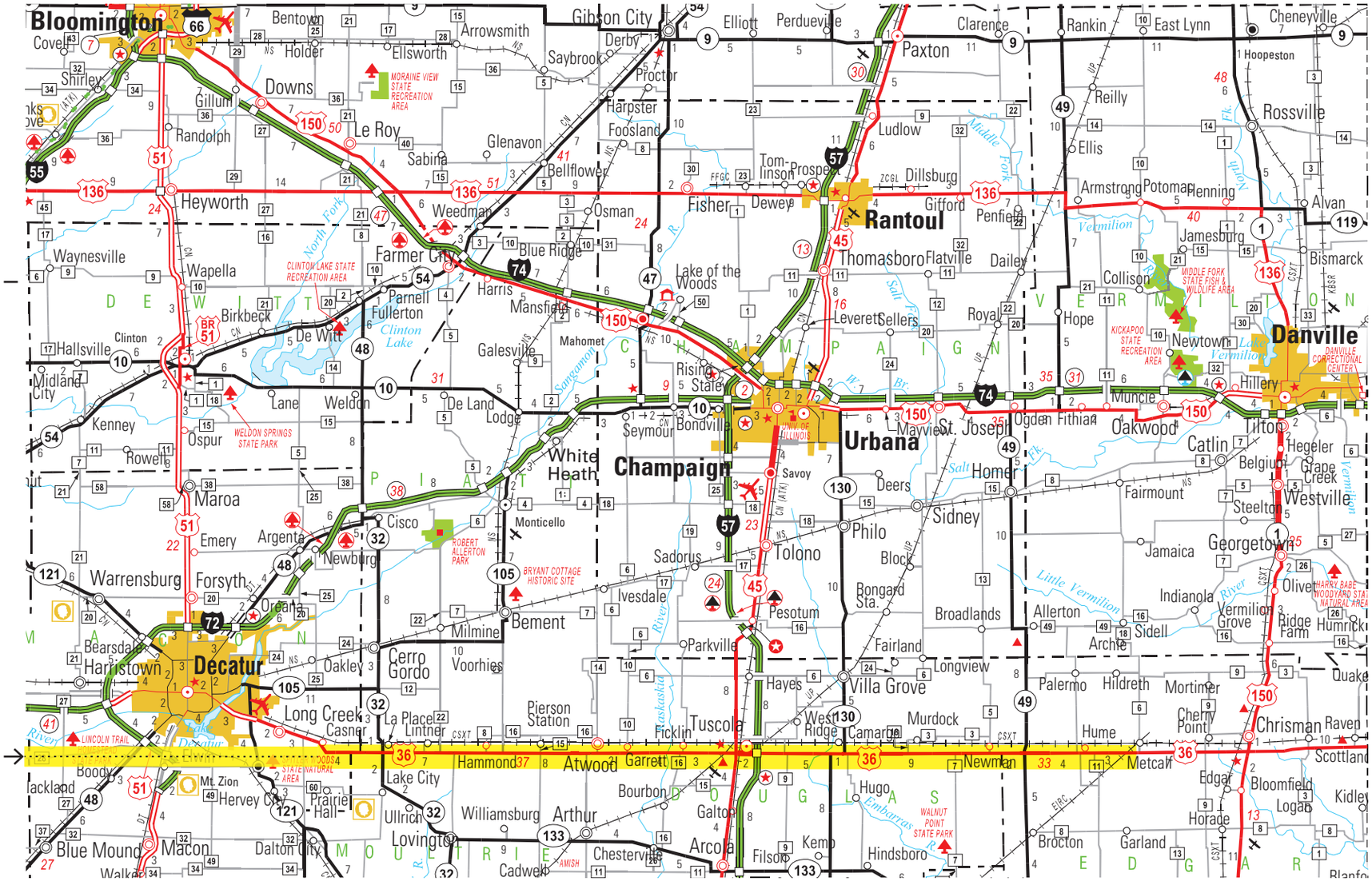
Roadside sign, as one drives eastward along U.S. 36, confirms the jog at the Messinger Correction Line.

William Rector's game plan for the 1821 surveys in central Illinois *east* of the Third PM, was first to advance subdivision of the Public Lands, northward to the proposed Messinger correction line (between Townships 15 and 16 N). Of the townships north of that line up to the proposed Borough correction line he would order the eastern third filled in, to close with surveys already completed from the Second PM, and postpone surveys of Ranges 1 through 8 East of the Third to the next year. The bloc of survey parcels, Range 9 E and eastward, included the promising river-confluence and grove sites of future Danville and Urbana, as well as a stretch of the wagon road connecting points east to the already-booming Military District northwest of the Illinois River.

As soon as John Messinger had laid the base of the first township contracted to be subdivided from his correction line that spring—T 16 N, R 9 E—finishing at

The Historic First Full Correction Line in the American Rectangular Survey
Now a Section of U.S. Highway 36 in the Study Area

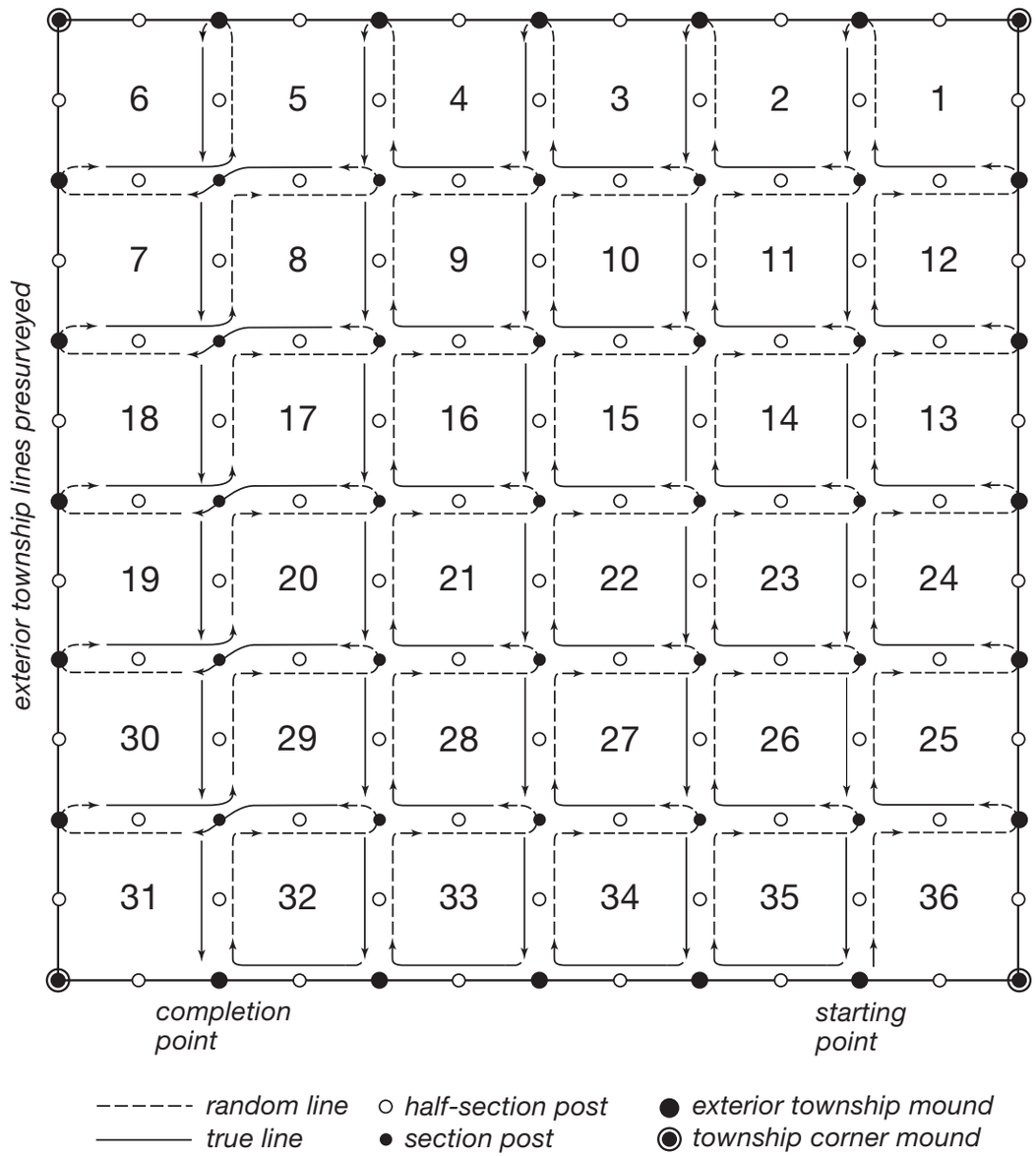
Map adapted from Illinois Department of Transportation Official Highway Map 2013–14.



Traditional Route Taken by Survey Parties, in Setting Interior Township Lines

In the six-mile-square Township of the American Rectangular Survey system, there are 5 latitudinal section lines 6 miles long, and 5 longitudinal section lines 6 miles long. That makes altogether 60 miles of interior lines to be surveyed on foot: compass-directed, chain-measured and monumented section lines. Each mile is first run "at random," then adjusted to existing monuments, and retraced, as a "true" line, doubling the number of miles to be surveyed. Thus, surveyor and crew surveyed a full 120 miles on the ground, just to complete the interior section lines of one six-mile-square Township, its exterior lines having been pre-surveyed.

This graphic is designed in a way that is meant to demonstrate both random and true lines.



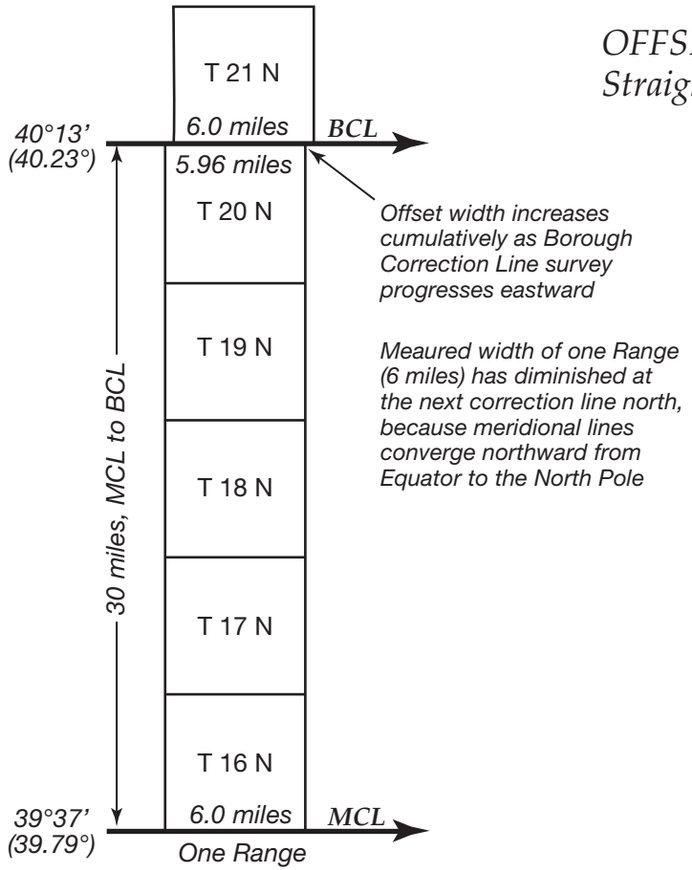
the southeast corner of the Township, his son Benjamin Franklin Messinger and crew were enabled to begin their survey northward in Range 9 E, a survey which would include the desirable lands around "Big Grove," the wooded heart of future Champaign County.

As John Messinger continued measuring and monumenting the bases of Townships 16 North of the Base Line, through a succession of Ranges east to the Harrison Purchase line, deputy surveyors followed within a week, to commence their assigned township surveys northward from the newly laid correction line. Jacob Judy began setting exterior lines for Ranges 10 E and fractional Range 11 E on April 6th, the very day that Messinger finished monumenting corners for those ranges on his correction line. With Messinger completing his line on April 9th, Joseph Borough, James McCall, Beal Greenup and James Thompson began their surveys north from the line on April 11, 13, 14 and 15, respectively.

When John Messinger reached the end of his assigned correction line at the Indian boundary line of the already subdivided Harrison Purchase on April 9th, on the bank of Crabapple Creek in future Edgar County, the usually all-business Messinger allowed himself to conclude his correction-line Notes with the observation, "No inhabitants in these parts of our state." *(Just thirty-five years later, the Local Land Offices in Illinois would close, after all Illinois lands had been sold to private owners, except for non-arable wetlands which were then consigned to the State Land Office in Springfield!)*

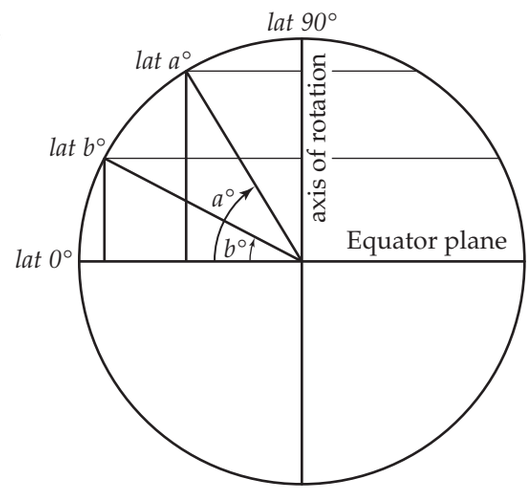
As they tackled their assignments, the various surveyors followed their own systems in choosing the order in which they would survey exterior township lines and the townships themselves. But, following instructions, survey of the interior section lines of a particular township invariably began one mile west of the township's southeast corner and worked through to a point one mile east of the township's northwest corner. (See diagram, left.) Imperfections were collected at the north and west sides of each township and were called "fractional," their irregular acreage computed as the product of the square chains in each parcel, divided by ten.

OFFSET STUDY: Coping with Nominally Straight-Sided Rectangles on a Spherical Surface



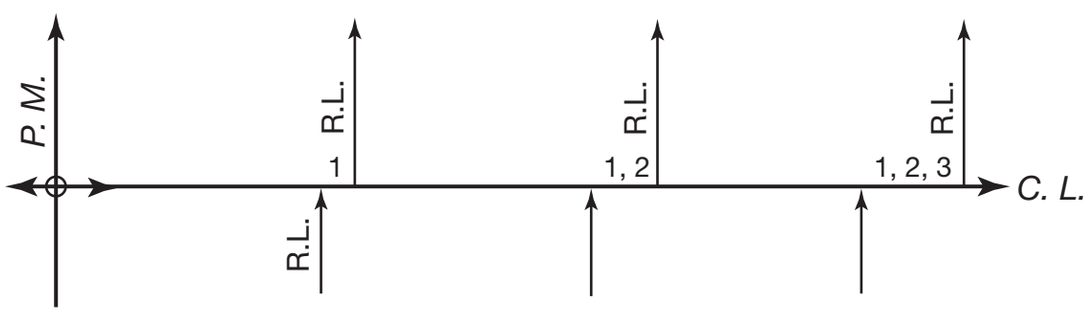
Offset width increases cumulatively as Borough Correction Line survey progresses eastward

Meaured width of one Range (6 miles) has diminished at the next correction line north, because meridional lines converge northward from Equator to the North Pole



Degrees of latitude on Earth's surface are degrees of angles measured from the center of the Earth

Diagrammatic representation of offset of Range Lines (R.L.) along Correction Line (C.L.) which is cumulative



Range Lines have converged, northward from previous C.L. to the south

Survey of the interior lines alone of the 36-section townships required compass-directed measuring, on foot, for 120 miles, since each mile-long section side was surveyed twice, once on a "random line," then surveyed back, as an adjusted true line. How might the landscape that these hardy people traversed be imagined?

Non-woody vegetation is seldom mentioned in the Field Notes of the 1821 east-central Illinois surveys. Trees of the prairie groves are named, particularly surveyors' "witness trees." Undergrowth in timber and savannah, mainly "hazel and vines," is repeatedly noted, as required in contract instructions. But observation of soft vegetation—grass and flowers—was not part of the working surveyor's assignment, though an occasional sentimentalist might make note of "a beautiful prairie," or of pond lilies in wetlands.

No note is made in the east-central Illinois 1821 surveys as to whether the prairie sod across which the plodding chainmen lugged their jointed-wire chains had been burned clean in previous-fall or early-spring prairie fire, or was still rough with shaggy grass duff, spiked with stiff, dry, seed-bearing stalks of last year's tall flowering plants. Regular prairie fire likely had vanished along with the native tribes who had fire-managed the grassland as wild pasture for their herbivore prey. But, escaped cooking fires and lightning strikes may still have chequered the vast, tawny landscape with substantial sooty stretches.

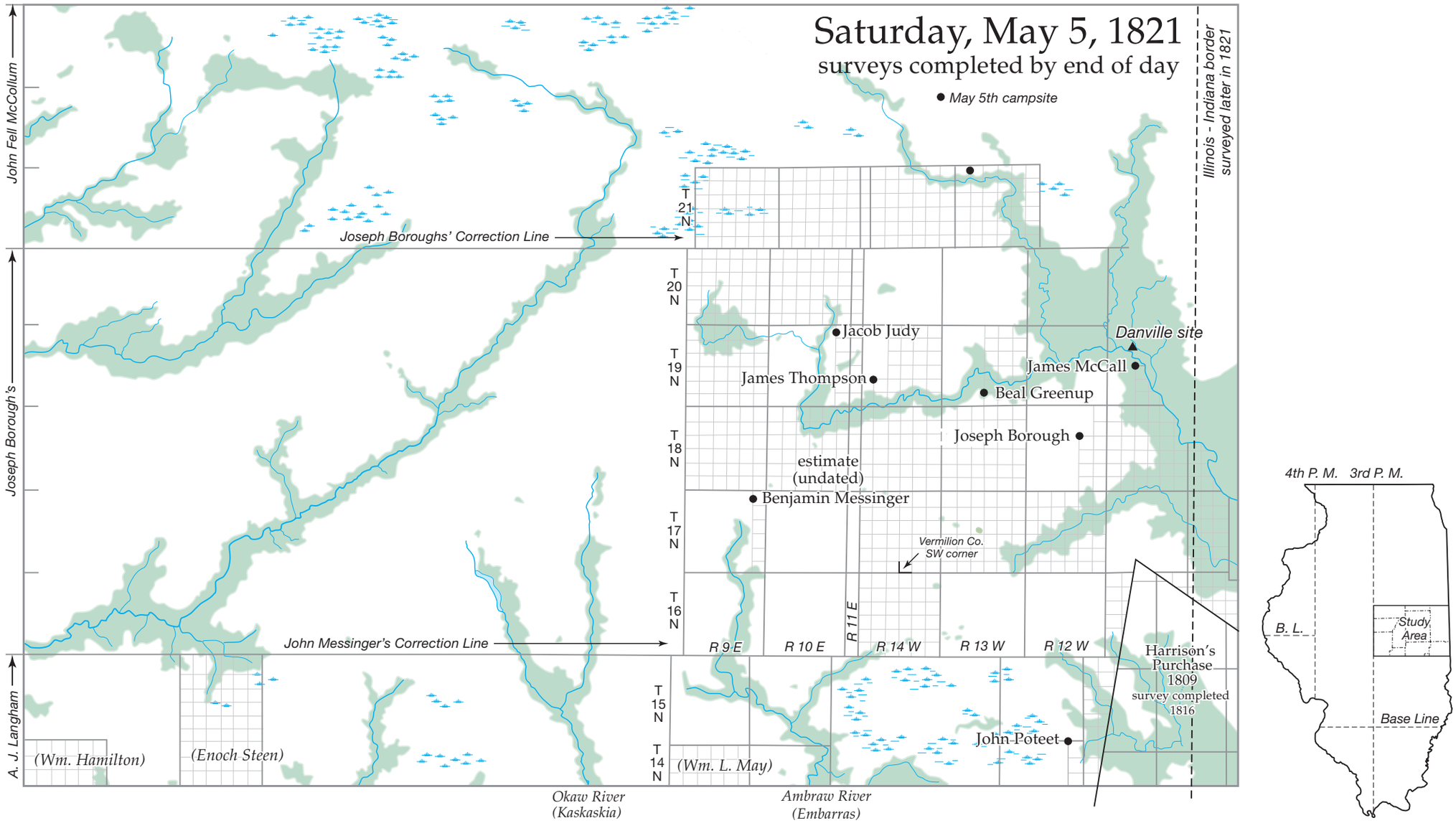
Often, we surmise, John Messinger, setting his correction line in early April, would have scuffed through long-stemmed dry grasses, some lying matted, flattened in one direction by winter winds and snows, some still standing as high as his head, his boots crunching the big, stiff-curled, brown leaves of prairie dock. Elsewhere, he may have walked effortlessly across clean-burned meadow, as featureless as a modern golf course.

Joseph Borough and John Messinger ran their parallel, thirty-mile-separated, correction lines almost in tandem, Borough completing his line on April 8th, Messinger his, on April 9th. Their contracts then directed each to round off their spring work by subdividing several townships (as previously noted). Borough was to survey his assigned tier of 5 townships north from *Messinger's* completed line,

while Messinger was to survey two, side-by-side townships (near his son's survey) north of *Borough's* line. The two parties must have all but passed each other on the prairie, each traveling to the other's correction line!

Mid-April through May 5th, Messinger subdivided his two assigned townships, from the plateau top of the Gifford Moraine east, down-watershed, to the bend of the Middle Fork of the Vermilion River at future Potomac, and beyond. A substantial part of his survey cut through river timber, but most criss-crossed the dry uplands, the slopes, and the marshes, of open prairie.

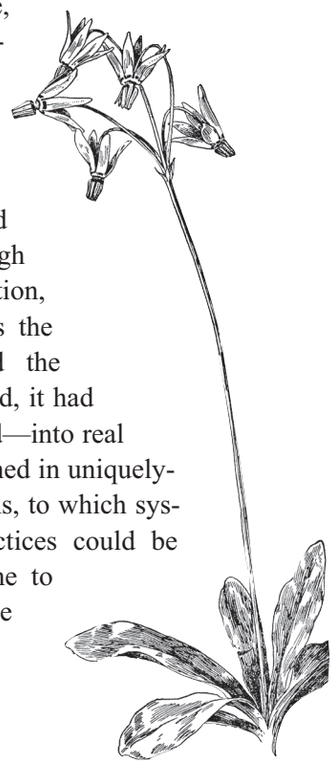
Wherever Messinger and party worked through virgin timber, dodging sizeable trunks of ancient trees, the forest floor would have displayed a diversity of tender flowering plants making the most of the sunlit interim before an overarching of new leaves shaded their habitat. By May 5th, when Messinger completed fulfillment of his contract (see map), a ground-level green would have started to glow through the tawny duff of the unburned prairies. Within weeks, last year's prairie straw would seem to melt into the rising new foliage and would vanish,



eventually, into the soil. Stretches of clean-burned prairie, though, were already emerald to the horizon—or to bordering timber.

By May 30th, when the last deputy surveyor, who had contracted to subdivide townships north from the Messinger correction line that spring, had finished his assignment, the horizon-wide natural meadow would have blossomed into a patchwork splendor of colors, humming with bees, waterfowl settling and rising in unison from its wetland ponds. But the prairiescape of May 5th, when John Messinger completed his contract, would have only just begun the season's floral show. Wild hyacinth, shooting star, yellow puccoon (perhaps tangling in the chainmen's apparatus pulled taut atop the sod) were trampled underfoot by surveyors being paid by the mile. The vanished prairie spectacle that intrigues us today in retrospect, would have been of passing notice to these men, secondary to the imperative of steady progress in their work.

The invisible grid laid by government survey on the wilderness landscape that spring of 1821 waited unnoticed, in the case of open prairie, for the promise, thirty years later, of all-weather, prairie-spanning railroads, which, coupled with the prior invention of the self-scouring steel plow, would make breaking of the tough prairie sod to cultivation, practical. Nevertheless, as the 1821 surveyors departed the land they had just surveyed, it had been completely processed—into real estate—and precisely defined in uniquely-describable quarter sections, to which systematic bookkeeping practices could be applied, ready in due time to be transformed into private property. The foundation of our landscape today had been permanently set. As the fore and aft chainmen inchwormed their measuring chains across wild uplands, through marshes, in and out of groves at the direction of the surveyor and his sighting compass, they had positioned, for our own time, whole networks of section roads—even city streets—permanently determining the physical background, the orientation, and even, perhaps, some of the ambience of our present-day lives.



Dodecatheon meadia L., or Shooting Star

The Messinger and Borough correction-lines-setup for the spring 1821 surveys in our study area, set a pattern for subsequent surveys across the U.S.: Uniformly-separated, east-west correction lines would precede, and cap, township-subdividing surveys approaching, usually, from the south. The newly measured, standard, range divisions along each correction line would then serve as springboard for ongoing sub-division work, advancing toward the next surveyed correction line to the north.

COLLISION ZONES

True, or Nominal only

As John Messinger and Joseph Borough established their two, near-identical, nearly-80-mile-long correction lines, east from the Third Principal Meridian in east-central Illinois in early April of 1821, each deputy surveyor methodically dated his notes at the end of the written record of that day's work. John Messinger's notes (starting 12 miles into his line) are dated April 2nd, through April 9th; Joseph Borough's, March 31st, through April 8th. *(Weather must have been wretched on April 7th 1821, as neither surveyor advanced his line that day.)*

In their Field Notes, each surveyor numbered Ranges routinely at first—Range 1 through Range 10 East of the Third Principal Meridian. Then, actually on the same day, 30 miles distant from one another, each surveyor inexplicably set a fractional Range 11 East, measured precisely at 23.85 chains plus 40 chains (approximately eight-tenths of a one-section width, out of the normal six-section-wide Range—with the uneven measure set, properly, at the west). Each surveyor then continued to work eastward along his line, routinely measuring the three, full, six-mile-wide Ranges remaining in his contract. Each labeled these Ranges: 14, 13 and 12 *West* of the *Second* Principal Meridian, *counting backward! (The curious phenomenon speculated on in the previous section on surveyors' instructions in the spring of 1821.)*

Publications on the American survey, including those of the Bureau of Land Management, successor to the General Land Office, accept this labeling, and, on maps, name the area west of the Second PM, all the way through Range 14 W, in Illinois, as "controlled by the Second PM," although, west from Range 9 West of the Second PM in Indiana, ranges were actually measured in the field directly from the *Third* PM eastward, and were thus "controlled" by the Second PM in name only.

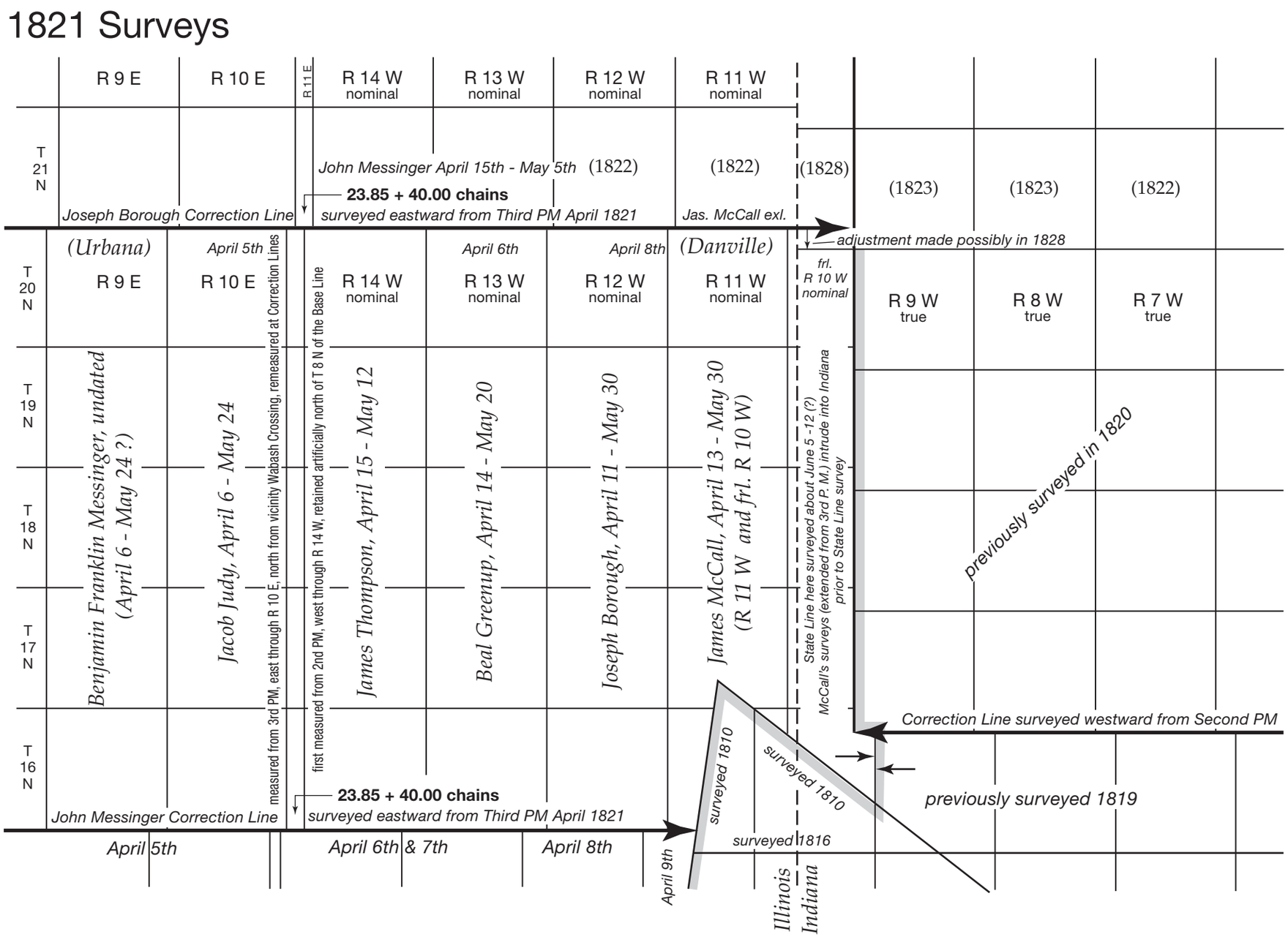
Surveyor-author Joe Webber recognized the oddity of a situation where surveys coming west from one Principal Meridian simply meet those coming east from another, with no natural or political boundary to demarcate the junction. He accepts the term "collision zone" to label this phenomenon.

Our earlier close analysis of the survey record revealed that from the southernmost appearance of Range 14 W of the Second PM in Illinois, as it crosses a meander of the Wabash northward into our State, in Township 5 South of the Base Line, and thence northward to the Base Line itself, the term "collision zone" is indeed relevant. Ranges at those latitudes, both those measured West from the Second and East from the Third, emanate from William Rector's 1805 "Fundamental Base Line" in Illinois, or from the line at the crossing of the Wabash between Townships 6 and 7 South, in Indiana, from which that Line derives.

The two surveys approaching from opposite directions did not quite meet. The gap remaining was attached to the Third PM and labeled "Fractional R 11 E of the 3rd." Webber suggests that Illinois is the only state where such a collision zone exists. But only in those few states in which separate Principal Meridians intersect a *common* Base Line (besides Illinois/Indiana, a few Gulf states

east of the Mississippi) would such a collision zone be possible, and, in the study area, only because the intervening State line had not yet been established in the field.

Fractional R 11 E of the Third PM runs, without deviation, from its origin in White County, north to the Jasper-Cumberland Counties border, at the top of Township 8 N of the BL. (Oddly, the unbroken lines forming its sides do not converge in the 78-mile survey northward?) The first intentional correction line in the eastern half of Illinois was run by 1818, between Townships 8 and 9 N of the BL, from 12 miles east of the Third PM, to the already-subdivided-from-the-Second Harrison Purchase jutting into Illinois. From this point north, the "collision zone" becomes nominal only.



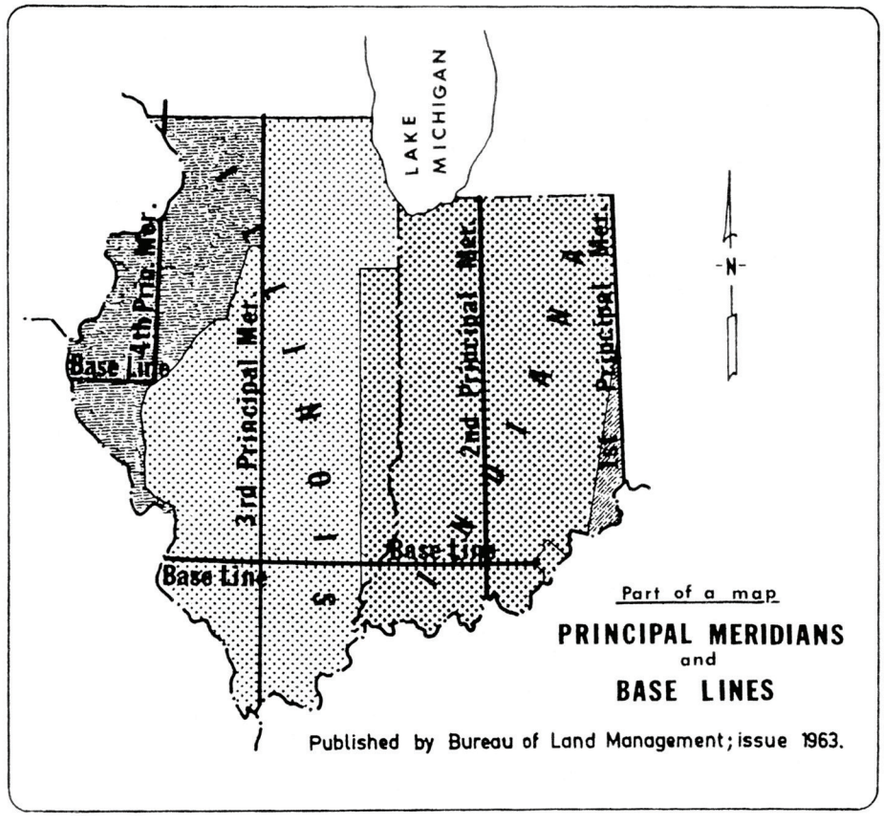
One wonders whether the peculiar measure, 23.85 chains plus 40 chains, must have been the width of R 11 E, measured at the top of T 8 N, and that this measure was revived at each correction-line jog east, working northward thereafter, up through the correction line between T 25 & 26 N. Beginning with the correction line between T 30 & 31, ranges are consecutively numbered from the Third PM, up to and ending at the State Line. *(There must be a human-interest story behind this measure, precise down to the exact number of 7.92-inch links, in an arbitrarily defined fractional Range. William Rector likely passed this number on verbally to both Messinger and Borough at the time that Messinger "witnessed" Borough's contract-signing in Rector's office, March 14, 1821. The peculiar number may have been a holdover expression of pique at the reprimand Rector had received from Mansfield sixteen years earlier, when he surveyed and monumented the Fundamental Base Line back east almost to the Wabash Crossing, without approval from Mansfield. At a later correction line, the surveyor rounded off the measure to 64 chains.)*

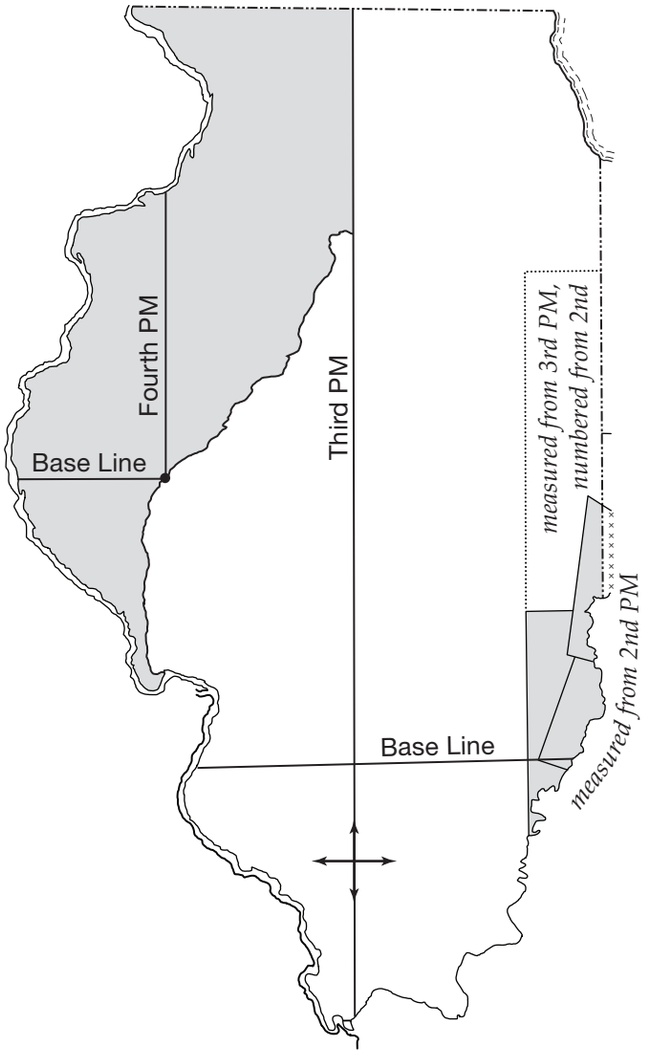
Northward after R 8 N then, the "collision zone" is nominal only, with the eastward survey from the Third ending at the Indian boundary of the Harrison Purchase. Apparently, William Rector deemed it expedient to extend the *pattern* of range numbering, without change, northward, by numbering ranges in reverse, as if actually surveyed west from the Second PM, while keeping a low profile on the matter, making no note of the practice in written contracts.

As we have seen, the tier of townships in "Range 12 W of the Second" was subdivided by Joseph Borough, after he had completed his correction line, which would cap his tier of townships on the north. James McCall was the surveyor called upon to set and subdivide the townships in "Range 11 W and Fractional R 10 W of the Second," closing with the already surveyed Range 9 W, in Indiana. McCall extended the Borough correction line east, as a cap for his 11 and 10 W surveys. He set and subdivided the tier of townships in "Range 11 W," cleaning up irregular spaces around the north point of the Harrison Purchase, and surveyed "Fractional R 10 W of the Second," which turned out to be grossly discontinous with the (legitimate) R 9 W of the Second, a true Collision Zone (××× in the map below).

Official literature accepts the ruse of the 1821–22 surveys, in which townships surveyed eastward from fractional R11E in Illinois are numbered in reverse order, and credited to surveys from the Second Principal Meridian in Indiana (first map to the right). In fact, until the State Line was officially surveyed, these townships were surveyed east, in the Third PM system, until they reached already-surveyed land in Indiana. As soon as the State Line was drawn, the false numbering of townships east of R11E stopped at that Line.

This became another "First" played out in our study area. In the American Rectangular Survey system, thereafter, it became a rule that a line of surveys always came to an end at some kind of definable boundary—a political boundary or river.





McCall's survey east from the Third had to enter Indiana, because the State Line had not yet been surveyed. And it is this discontinuous junction, between "Fractional R 10 W" and R 9 W, which is a true "collision line." The phenomenon would not happen again in U.S. surveys.

James McCall completed his assignment on May 30th. A few days later, sometime between June 5th and 12th by estimate (undated notes), Deputy Surveyor John McDonald, surveying the State Line north (from a "stone pillar" set in the northwest bank of the Wabash on a line due north of Vincennes), passed through McCall's fractional, nominal R 10 W, as he permanently set the location of the Indiana-Illinois State Line. Starting with the surveys of the following spring (1822), near the top east line of our study area, surveys eastward from the Third PM stopped at the State Line, as did surveys west from the Second. Our small area thus played a significant role in the United States survey system, in that the principle of ending surveys at a natural or political boundary was finally, fully, established with the surveys in the east-central Illinois study area, as was the pattern of correction lines spaced uniformly where feasible.

AFTERMATH

With his 1816 appointment to the post of Surveyor General in St. Louis, William Rector, once called "the most skillful and able *practical* surveyor in the United States," took to his prestigious new role as administrator with energy and enthusiasm. In 1821, five years into his tenure, he let contracts for 559 townships in the states of Illinois, Missouri and Arkansas, at a total cost of more than $120,000, although, as his critics were to point out, the actual purchase of Public Lands was still slow, following the Panic of 1819 (Rohrbough).

Rector generously handed out surveying contracts to brothers, nephews and friends, who, all too often, passed the work on to "sub" deputy surveyors, whom they paid less than they had contracted for, pocketing the difference. To quote a deposition given in 1823 by sub-deputy surveyor Richard T. Holliday, 1822 surveyor of the bulk of future Piatt County in the study area:

> *". . . in the summer of eighteen hundred twenty one he [Holliday} surveyed for Thomas and Stephen Rector, who as he understood had a contract for one hundred and thirty or forty townships . . . that at the time he was out surveying, there were eight sub-deputies employed at the same time by them . . ."*

And:

> *". . . in eighteen hundred twenty two – while surveying for Elias Rector, he states that the said Rector did not do any part of the work – that he was Postmaster in Saint Louis at the time, – he also says that a considerable portion of the surveying of the Public lands is done by sub-deputies and as he understood at reduced prices – and has been the practice for several years . . ."*

Senator David Barton, member of the first legislature of the new State of Missouri, publicly accused the ambitious Surveyor General of "official misconduct and abuses." The June 25, 1823 issue of the St. Louis newspaper *The Missouri Republican* carried a letter signed "Philo," which elaborated on the charges. Finding that the letter had been written by Senator Barton's younger brother Joshua Barton, Thomas Rector, one of William Rector's younger brothers, challenged Joshua to a pistol duel on "Bloody Island" in the Mississippi River near St. Louis, an infamous dueling ground out of reach of the laws of either adjoining state. Joshua Barton suffered the fatal shot. William Rector, away from St. Louis at the time, wrote a letter to President Monroe, expressing embarrassment over the incident. And Senator Barton intensified his attacks on Rector.

Later the same year, Rector wrote to the General Land Office, promising to abolish the practice of subcontracting surveys, by instructing deputy surveyors to personally perform the surveys they contracted for. But the ploy did not erase former offenses. In July of 1824, President Monroe removed Rector from office.

The proud William Rector disappeared from the public scene and died two years later, on June 6, 1826, at the age of 53.

When William Rector crossed the Wabash on October 11, 1805, he was commencing the laying of a pre-sale, property-line framework, which would come to define real estate across the entire state of Illinois, permanently. The enormous achievement would be completed only 38 years later, though twelve years after Rector's death.

The work of William Rector, John Messinger, and all the other U.S.-government-employed surveyors of the First Surveys in Illinois, created fundamental features of the landscape which we live with, unaware, every day. Moreover, like landscape alchemists, they transformed the natural "landscape" of the hunter into the privately-ownable "land" of the intensive food producer, telescoping the Old World's millennia-long Agricultural Revolution into a few decades in Illinois.

Few citizens of the State of Illinois today begin to comprehend the pervading influence on their modern, everyday surroundings, and lifestyles, of the work of these forgotten men.

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1:24,000: 7 1/2-minute quads covering study area

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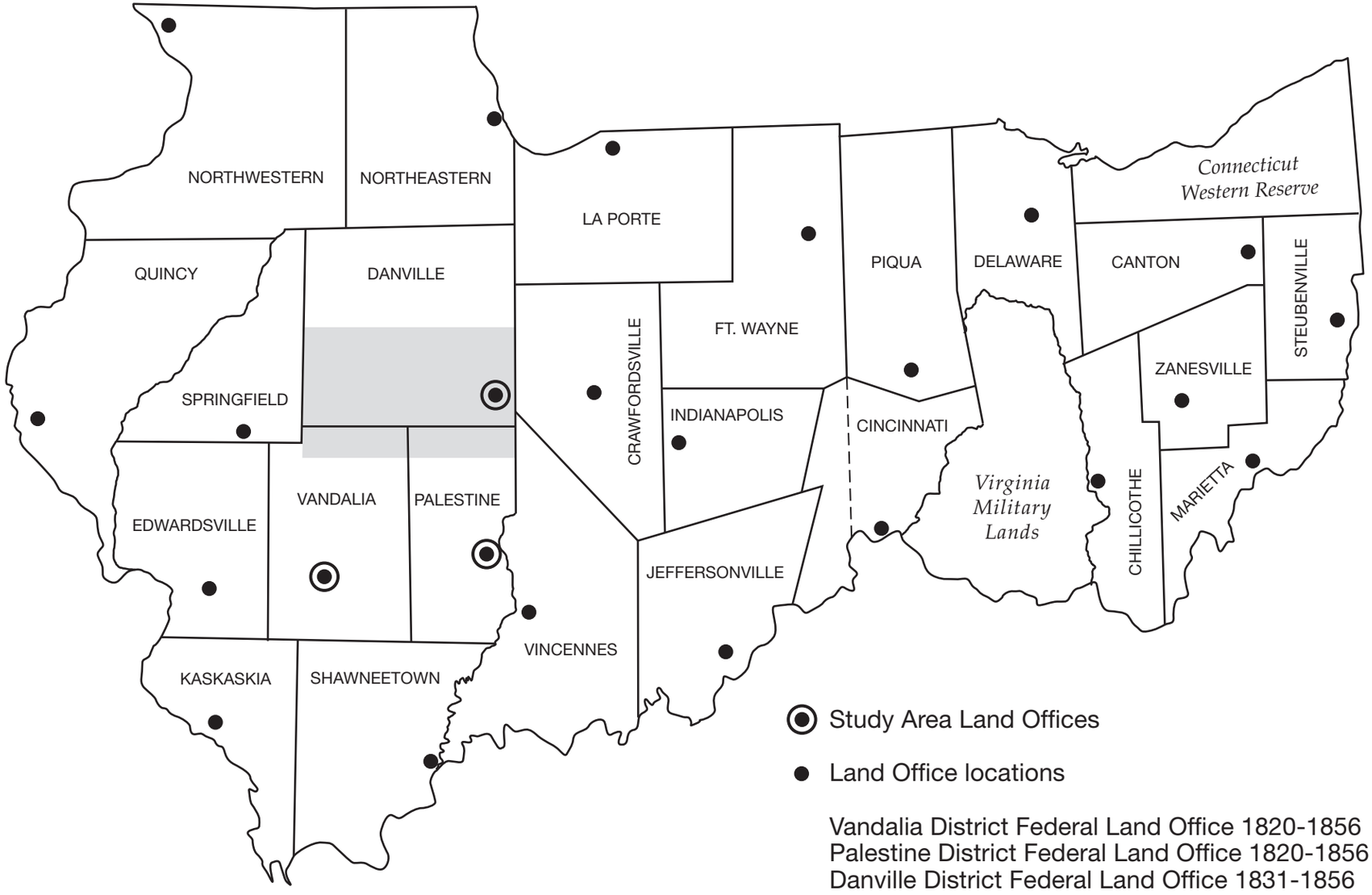
Federal Land Districts and Land Office Locations (●) in the Lower Northwest Territory States, 1834



MARKETING THE PUBLIC DOMAIN

Federal Land Office Sales Convert Government Land into Private Property

LAND OFFICE OPERATIONS

The Rectangular-Survey system reduced the gently-ridged Landscape of east-central Illinois to an imaginary flat plane; then measured and marked it into a grid of "Sections," nominally mile-square, and aligned with latitude and longitude.

The Public Domain, thus quantified, and defined as marketable Land, was launched into its conversion to Private Property through a series of Presidential Proclamations, each designating a particular area to be presented at auction, starting on an advertised date, by the "District" Federal Land Office that had jurisdiction over that particular area. The U.S. Treasury hoped to benefit from these introductory auctions by gaining enhanced income at the outset, should potential buyers compete in bidding the price for the most desirable land higher than the standard minimum. (In the study area, in actual practice, most of the land sold during each of the several-day opening periods went for the minimum.)

Land left unsold at these inaugural auctions then continued to be subject to sale at the particular land office, but was routinely offered at the standard, minimum price per acre. Thereafter (except in some special cases), only Section 16 out of each 36-section township would be sold at auction (on the steps of the local county courthouse perhaps) at some convenient later date, in order to maximize funds providing financial support to local public schools. These "school sections" (16) divided usually into sixteen 40-acre "lots," did indeed bring in elevated prices per acre.

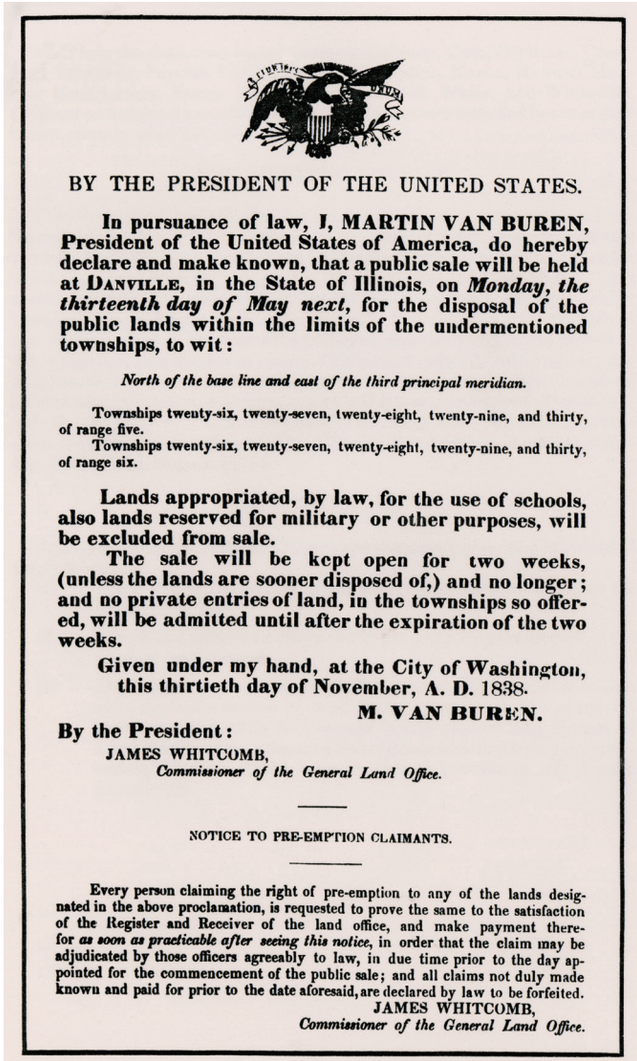
By the time First Government Surveys of the east-central Illinois study area had commenced in 1821, followed by the first Land-Sale Proclamation for part of our area in 1822, the Land Act of 1800 had been superseded by the Land Law of 1820 (in sync, by chance, with the 1820 openings of both the Palestine and the Vandalia Land Offices, from which the first sales in our study area would be made).

The old Act, by authorizing land purchases in the form of serial payments, had led to bookkeeping confusion and to speculation abuses. The new Law, exacting full payment for land at the time of purchase, was not an entire success, however, since "full" payment was permitted in the form of bank-loan notes not necessarily backed by hard cash.

The new Land Law, of 1820, specified that District Land Offices were to sell land only in four standardized tract-sizes: full, half, quarter, and half-quarter Sections—640-, 320-, 160- and 80-acre tracts, respectively (with the rectangular tracts oriented either N-S or E-W). The quarter-quarter section—40 acres—was authorized in 1832, just in time for the big buying rush of the mid-1830's. At one quarter mile on a side, the latter was to be the smallest unit of public land sold at government land offices, and was useful in helping purchasers configure their land-choice more flexibly.)

When buying rectangularly-surveyed land, the pioneer farmer could not delineate his land preference at will, along meandering natural boundaries, as he could have in the old metes-and-bounds system. He was required to "bound" his farm geometrically, with straight N-S, E-W boundaries, overriding the natural landforms which regulate water drainage. He needed to cover his choice of farmstead location by fitting together, domino-style, a selection of compass-oriented, rectangular or square tracts limited to the five pre-specified sizes. (On rare occasions, a settler might resell a portion of his land by the old metes-and-bounds system, leaving odd, angled lines on the squared-off township plats of future county plat books!)

The 1820 Law set the standard minimum price, after the initial auction, at a dollar-and-a-quarter per acre, not a trivial sum for a cash-poor young farmer back in the 1820's and 30's, we suspect; though not unreasonable, at $200 for an unimproved site for a 160-acre family farm.



BY THE PRESIDENT OF THE UNITED STATES.

In pursuance of law, I, MARTIN VAN BUREN, President of the United States of America, do hereby declare and make known, that a public sale will be held at DANVILLE, in the State of Illinois, on *Monday, the thirteenth day of May next*, for the disposal of the public lands within the limits of the undermentioned townships, to wit:

North of the base line and east of the third principal meridian.

Townships twenty-six, twenty-seven, twenty-eight, twenty-nine, and thirty, of range five.

Townships twenty-six, twenty-seven, twenty-eight, twenty-nine, and thirty, of range six.

Lands appropriated, by law, for the use of schools, also lands reserved for military or other purposes, will be excluded from sale.

The sale will be kept open for two weeks, (unless the lands are sooner disposed of,) and no longer; and no private entries of land, in the townships so offered, will be admitted until after the expiration of the two weeks.

Given under my hand, at the City of Washington, this thirtieth day of November, A. D. 1838.

M. VAN BUREN.

By the President:

JAMES WHITCOMB,
Commissioner of the General Land Office.

NOTICE TO PRE-EMPTION CLAIMANTS.

Every person claiming the right of pre-emption to any of the lands designated in the above proclamation, is requested to prove the same to the satisfaction of the Register and Receiver of the land office, and make payment therefor *as soon as practicable after seeing this notice*, in order that the claim may be adjudicated by those officers agreeably to law, in due time prior to the day appointed for the commencement of the public sale; and all claims not duly made known and paid for prior to the date aforesaid, are declared by law to be forfeited.

JAMES WHITCOMB,
Commissioner of the General Land Office.

Presidential Proclamation for the Sale of Specific Public Lands - 1838.

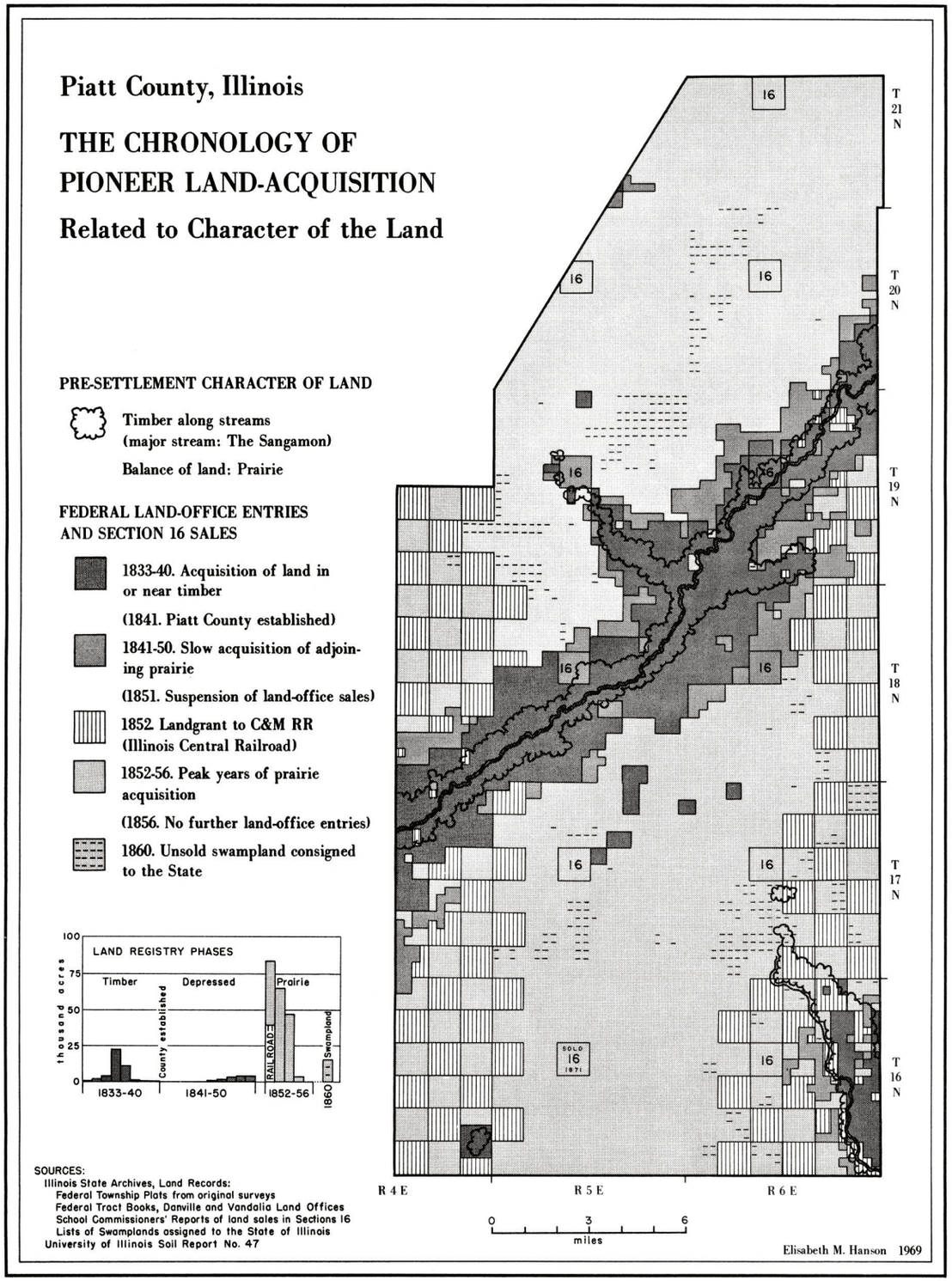
The westward-pressing population of farm families, hungry for affordable land they could own and control as they worked it for their livelihood, had to compete with (among others) members of east-coast "Founding Families of American Capital-ism," eager to store some

of their wealth in large holdings of the promising, wilderness real estate. These non-resident "speculators" gambled that Land—treated as a stationary, permanent equivalent to Capital—would increase in value over time with little or no input from the original investor, as an ever-incoming new population competed for ever-sparser remaining farm space. Moreover, while the *unit price* for all Land was equal, individual units varied in *value*, according to their existing assets and their future potential with respect to likely town sites and transportation routes. Prospective buyers were fully alert to any such advantageous angles, as they pondered purchase options on township plats spread before them in District Federal Land Offices.

The farmer occupied and worked with Land directly, to create the sustenance needed for his family's survival. The speculator was a secondary user of Land, for revenue, often at the expense of primary users. *Settler versus Speculator* thus became the classic confrontation of the Illinois frontier, as wealthy investors "hoarded" land in large tracts, until the working farmer had to pay more than the government price to obtain some of it, or play the dependent role of tenant.

This unfortunate outcome from attaching monetary value to a universal human necessity—geographic space for living and for livelihood—in a population widely varying in individual purchasing power, may not have been fully anticipated by Thomas Jefferson when he co-crafted a national land system designed to evenly space an independent, self-reliant and democratic, rural citizenry.

Public Land sales in Illinois, in the 1830–1856 period, peaked twice, first in 1836, during what might be called the "bank loan-note boom," and again in the early 1850's, during close-out sales of the remaining public lands when new transport technology (railroads) promised improved facility of commerce. In east-central Illinois, these two sales phases happened to correlate with a Landscape dichotomy—substantive sale of timber-related land and



sale of the remaining prairie land. (See "Land Registry Phases" graph, opposite.)

The obsessive enthusiasm of settler and speculator alike for the lure of "the Western lands" (purchasable with banknote credit) fueled the land-sales boom which began building in mid-1835, accelerating into 1836. President Andrew Jackson, "who except for Thomas Jefferson was the only American President who seriously deplored that feature of public land policy which permitted speculators to buy land in unlimited amounts," moved to clamp down on the buying frenzy, more than half of which was by non-resident investors (Gates 1942).

A note, ordered by Jackson and issued by the Secretary of the Treasury, was circulated in July 1836 to all District Land Office Receivers, directing them "after the 15th day of August next to receive in payment for the public lands nothing except… gold and silver ["specie"]…" As Jackson explained later, in his annual message to Congress in December, the so-called Specie Circular was intended to "save the new States from a nonresident proprietorship, one of the greatest obstacles to the advancement of a new country and the prosperity of an old one."

Public land purchases began immediately to decline, though continuing fairly strong through the first half of 1837 (while wealthy investors were still in action), then dropping to rock bottom with the consequent bank failures of the Panic of 1837. Land capitalists, finding that their privately owned investment land was even more difficult to sell to settlers than government land, cooled down their speculation ardor.

In the prairie-timber dichotomy of east-central Illinois, first-choice land for the wood-dependent new farmer had always been for that land which was in or near timber. By the Panic of 1837, timber-related land had been virtually bought up. Not until the early 1850's with the coming of the all-weather transport convenience of railroads, coupled with increasing use of technical improvements in farm methods (e.g., the prairie-sod-cutting Deere plow, and the ditching of wetlands) did sales again peak, as buyers (including a very active second set of speculators) rapidly bought out the remaining cultivable open prairie. (See "Land Registry Phases" graph, opposite.)

LAND FOR LIVELIHOOD

The Pioneer Family Farm

The first, full stock-and-crop farmers who appropriated land for livelihood, in the area now east-central Illinois, had no title to it, nor could they buy it. When these early westward-migrating farm families found a promising spot of wilderness, which, while "freed" by Indian cession and surveyed, had not yet been proclaimed for sale, they might settle down there and "improve" it, perhaps with a three-sided log cabin, fences, and a rudimentary stable. While waiting for the chance of legal title catching up to them, these so-called "squatters" went about the business of frontier survival, not infrequently forming a buffer of sorts between landowners behind and territorial Natives ahead. When their area was finally officially proclaimed for sale, the "movers" among them sold their improvements to a new (legal) occupant and moved on to the next public-land frontier, while the "nesters" paid for the land they had illegally occupied, and might then go on to become "founding families" of the new community.

The illegal settler's stressful situation was eventually mitigated through a succession of "Preemption Laws," giving him certain rights of title to the land he had occupied and improved. These laws recognized that the goal of the National Land System, even overriding the needs of the Treasury to obtain revenue from Public Land sales, was the ideal that, in a democracy, *land for livelihood* should be a right of even the poorest American citizen, as the great wealth of *federally owned* land became available to private owners. *The principle came to its final fruition several decades later, when President Abraham Lincoln signed the 1862 Homestead Act which, in effect, institutionalized the practice of pre-empting Public Land, when it decreed that a documented, five-year, productive occupancy of up to a quarter Section of the public domain would substitute for a monetary payment for it.*

In the 1830's, a prospective new pioneer, looking westward to the promising timber-edge lands of east-central Illinois' grove-and-prairie country, by then available for purchase, was often a member of an extended family historically experienced at opening up new farmland, when earlier generations had "stone-stepped" westward from the East Coast. In which case, he would have plenty of local counsel on the action he contemplated. In Ohio, Indiana or Kentucky, he might hold off on his plans until the season's harvest at home had produced a cash surplus and a store of seed grain, before packing family and goods for the wagon trip west, in time to settle in before snowfall. Not infrequently, entire adult extended families made the momentous, risky move together, knowing that they could rely upon one another for support, whatever frontier crises might arise.

The incoming pioneer might travel directly to the town of the District Federal Land Office that had jurisdiction over the area in which he planned to settle (to Danville, to Palestine or to Vandalia, for specified parts of our study area). Arriving in town, he would ask to be directed to the offices of the Federally-appointed Land Officers—the Register and the Receiver. These two officers, responsible for providing their own work spaces, might rent space jointly, but, in view of the sporadic timing of visits from land buyers, each officer may simply have used a publicly accessible room in his home, with the two houses located "nearby" one another. The Register oversaw tract selection, from federal township plats in his care, while the Receiver collected settlers' payments for the selected land.

Heading first for the Register's office, where the valued store of government township plats held the promise of his future, the prospective new settler might approach in some uncertain anticipation. The act of choosing and purchasing, with cash hard to come by, a tract of raw wilderness which one hoped to fashion into a source of livelihood and a family home, ranked as one of the major milestones in pioneer life.

The Register in his office, or his clerk, would pull out, from the office map-file, the plat (map) of the requested, six-mile-square township (scale: 40 chains, i.e., one-half mile, to the inch; on a sheet about 13 1/2 by 16 1/2), and lay it out, perhaps on a lectern-sloped display-desk, for the prospective buyer, seated on a high stool, to study. (But this is a scene for which we have found no written description.)

The Register's office set of township plats was one of those sets drafted in triplicate from the original surveyors' field notes (see Surveys chapter). Like the other two original township plat-sets stored in St. Louis and Washington, these plat-maps indicated approximate location of flowing streams, of ponds crossed by Section lines, and of timbered areas bracketing such water features, as noted by the original Government surveyor. The plats were especially useful in showing location of timber, since availability of wood was so crucial to the early pioneer family's living requirements.

The buyer would find that tracts already sold had been clearly outlined on these local-office plats, and labeled, variously, with notations, receipt numbers, military land-warrant numbers, etc., showing him, cartographically, the limits of land still available to him. (See Part 3 opener map.) Sales preceding his had been twice recorded in writing by the Register: 1) in the Register's *chronologically-ordered* ledger book, and 2) in the big office Tract Book in which entries were *geographically ordered,* arranged by township.

In some cases, the incoming pioneer would be following in the footsteps of a former neighbor or relative, who had recommended a particular area, adjacent to his, perhaps. The purchaser might then simply confirm this choice, sight unseen if he feared competition for the site. If land sales were slow, though, he would likely take several days to ride out and look at a site before making a final decision. (Precisely locating the site might require the help of a local surveyor, or of a knowledgeable neighboring settler.) Traditionally, the incoming pioneer might choose some timbered land, balanced with some adjoining prairie, and possibly, to keep his options open, a tract on the opposite side of the river. He would hope to find land near an inter-settlement wagon road. He would look for a home site on a rise of ground, and perhaps for a fresh spring nearby.

After a legal description of each of his standard-size-tract choices, along with his name and place of residence, had been noted by the Register, the prospective settler, carrying some sort of authorization from the Register, would then be directed to the *other half* of the local land office—the Receiver's office. There he would surrender the required payment, while duplicate receipts for each standard-size tract included in his purchase were made out, one to be shown on his return to the Register's office, the other to be retained by the Receiver, who recorded each sale in his chronologically-ordered ledger book. When the Register (after entering a record of each transaction in his own ledger book) finally wrote the buyer's receipt numbers in the appropriate spaces on the local office plat-map, showing that those tracts were no longer available for sale, the new settler was in business, braced for the challenging labor of transforming an expanse of unfamiliar wilderness into a sustaining and comfortable home farm.

As the wave of activity in sales of public lands east of the Third Principal Meridian in Illinois swept northward, the need for a more northerly land district was indicated. In February 1831, creation of a new district was decreed, to be formed from the northern tiers of townships of the side-by-side Palestine and Vandalia land districts (both established 1820). The pioneer settlement of Danville in Vermilion County, at the eastern, incoming, edge of the new district, was chosen to serve as District Land Office headquarters.

A "flourishing little village of half a dozen or more cabins," located at the strategic site of the old Piankeshaw village at the confluence of the North Fork with the Vermilion River, Danville was a natural gateway

Birth of a County

Would-be settlers of the frontier in central Illinois began arriving soon after the government land surveyors departed. Although the lands that had just been measured and monumented in the field might not be proclaimed for sale by the government for another decade, a scattering of adventurous families soon began moving onto the survey-processed land. Choosing likely spots, they built cabins and barns, and laid informal claim to the land tracts upon which the structures were built.

These "improvements," then, were considered the settler's property, although the land they stood on was not. If the family moved elsewhere, a later occupant was obliged to seek out the first occupant and pay him for his improvements.

The stretch of Sangamon River Valley, shown opposite, was surveyed early in the year of of 1822, less than three years after the last Indian Land Cession there. Before winter of that year of 1822, a government-appointed Indian Agent had built a cabin at a choice location near a Native-revered spring on the east side of the river. He and his family lived there 1822–1827. By 1829, a frontier tinsmith, James A. Piatt, had become interested in the by-then abandoned site, had found and paid the first occupant for his improvements, and had moved in with his wife and six children.

Early in 1831, the area was at last proclaimed for sale, at the Vandalia Land Office. Mr. Piatt hastened, in the dead of a particularly snowy winter, the long way to Vandalia to "enter" the choice Quarter Section on which he lived, securing his ownership. Two years later, 1833, he entered the Quarter Section next east (by this time traveling to the new Land Office in Danville). These side-by-side Quarter Sections ***(enhanced outline, opposite)*** *were to become the core around which future Piatt County would develop, the earliest land purchases in the county and the site of the future county seat, Monticello, Illinois, in a county inevitably named for the enterprising Mr. Piatt.*

Site of the magical spring where the story all began is now obscured by modern commercial streets and buildings in a town now well-known for its artisans.

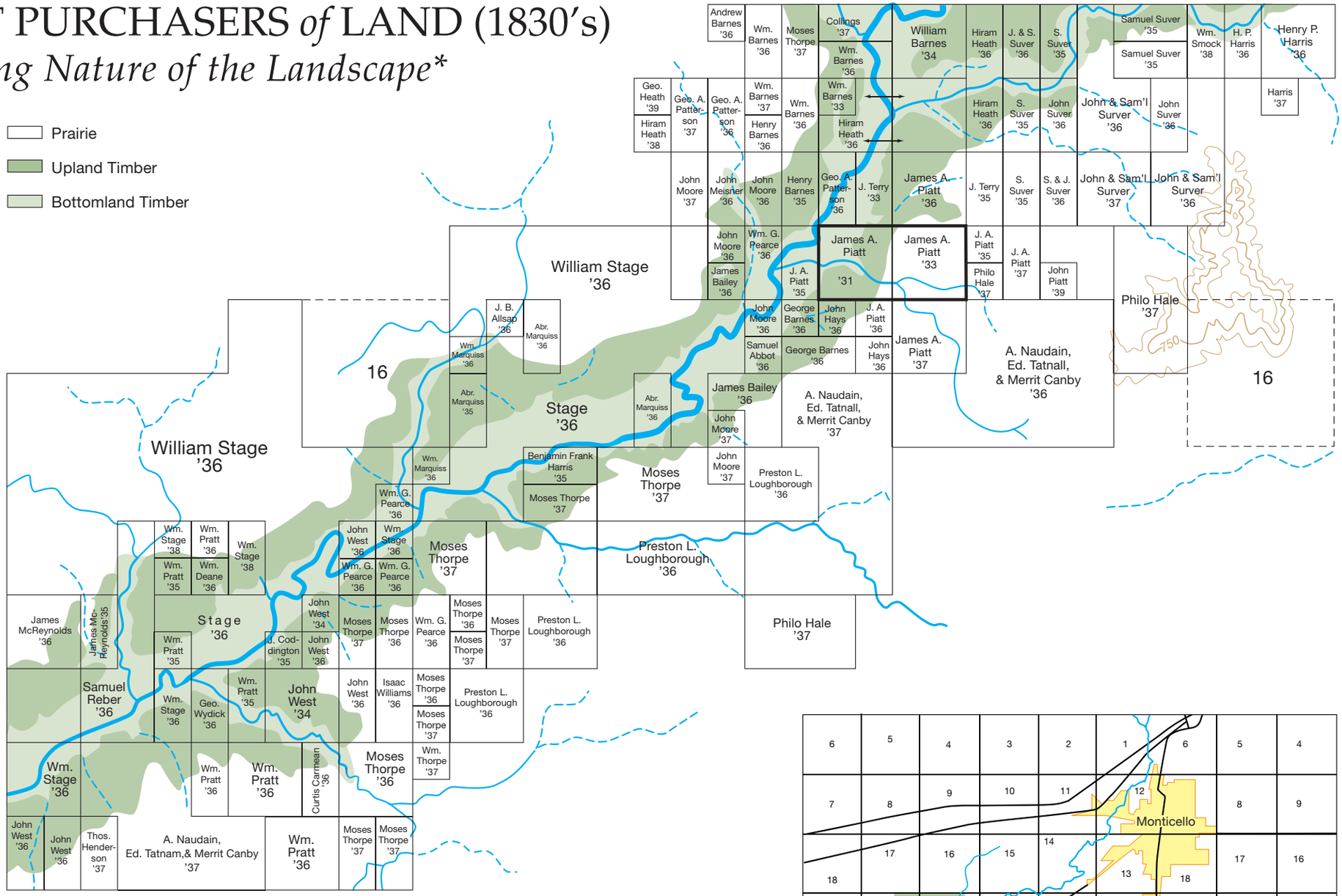
FIRST PURCHASERS *of* LAND (1830's)

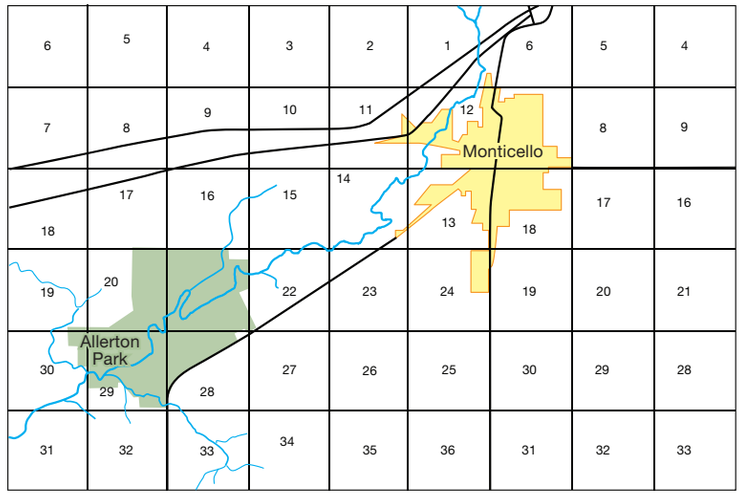
*Showing Nature of the Landscape**

Prairie

Upland Timber

Bottomland Timber





**Sangamon River, Piatt County, Illinois*
same area as color map,
showing Allerton Park and Monticello

out of the forested East, into the open Grand Prairie of Illinois. The new land office was accessible from several different directions—by riverboat out of Pittsburgh via the Ohio, Wabash and Vermilion Rivers; and overland, via the National Road from Cumberland (MD) to Indianapolis continuing west on the cutoff wagon road toward Peoria and the Military Tract. Remnants of the old French-era, Kaskaskia-Detroit trace passed diagonally nearby, while established trading trails led north to the busy, young town of Chicago, and south to the Wabash crossings linking with Terre Haute and Vincennes. In time, the new land office's Indiana twin, the Crawfordsville Land Office, 40 miles east on the road to Indianapolis, shared with the Danville Land Office sales jurisdiction over respective parts of the fertile Wabash River watershed. With its establishment as seat of a government land office, Danville "became the leading town in that part of the state" (Coffeen 1870).

Two Vermilion County towns—Danville at the mouth of the North Fork into the Vermilion River (the Piankeshaw village site) and Georgetown at the north-south-trail crossing, over the Little Vermilion to the south—are named for brothers, Dan and George Beckwith. Sons of a woman who had been a young survivor of the 1778 "Wyoming Valley (PA) Massacre," the adventuring brothers presumably took the water route, via the Ohio and Wabash Rivers, into "Western Country."

Borne on the crest of advancing development, their first stopover was in the Fort Harrison (IN) area (near present-day Terre Haute on the Wabash), just as the first government survey (1816) of the Harrison Purchase was taking place in the area. Thence, the brothers crossed the Wabash, northeastwardly into what (in 1823) was to become Edgar County, and were residing there during the year of 1818 when Illinois was admitted to the Union. Attracted by the potential of the Vermilion Salt Springs, they moved yet northward into what (in 1826) would become Vermilion County, Illinois. When that area was first proclaimed for sale in 1824, Dan Beckwith purchased part of the site of the old Piankeshaw village (October 19, 1824). On the same day, Guy Smith, actually Receiver at the Palestine Land Office at the time, sold himself some land, adjacent-east of Dan's purchase.

Meanwhile, a well-educated Pennsylvanian, Amos Williams, had arrived in the area, likely also by boat. Printer, surveyor, and all-round frontier leader, Williams, as first county surveyor of Edgar County, platted the Edgar County seat, Paris, in 1823; co-platted the Vermilion County seat with first county surveyor of Vermilion County, Dan Beckwith, in 1827—after Beckwith and Guy Smith had donated part of their 1824 purchases for the town site, at the request of the Vermilion County commissioners who had selected the advantageous location.

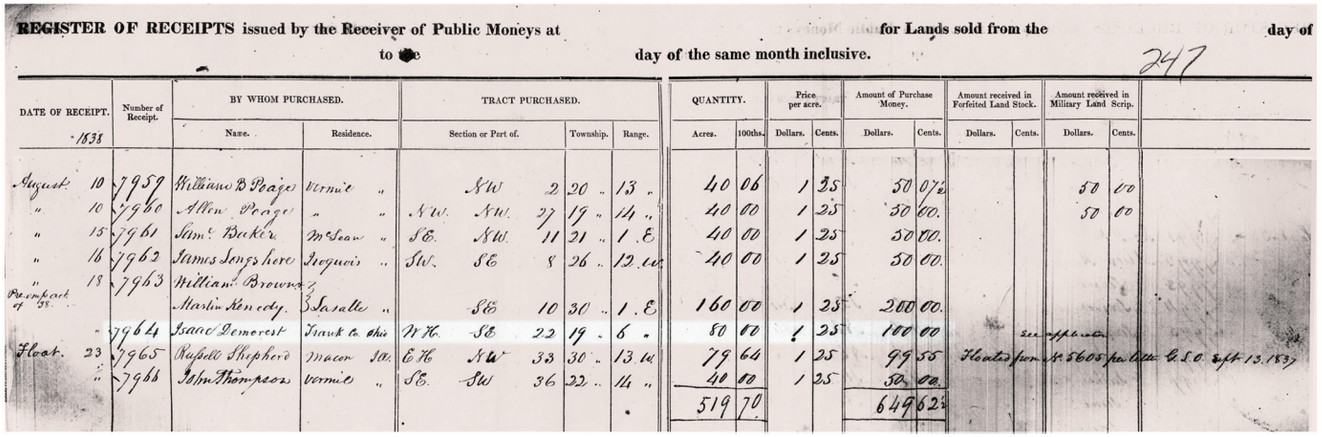
Auction of town lots, overlooking the northward bend in the Big Vermilion River downstream from the mouth of its tributary North Fork, was conducted by (then) Vermilion County Commissioner Amos Williams, on April 10, 1827 (to the buzz of rattlesnakes warming up in the spring sunshine, it is reported). While the Beckwiths proposed that the new town be named for Williams, Amos proposed, in turn, that it be named for Dan, the ambitious, young, six-foot-two County Surveyor (and trader) who had donated part of his land to the cause. Concurring, the Commissioners settled on the name Danville.

Amos Williams then traveled back east to fetch his mother and younger sister Mary to the new town. It took only about a year for Dan Beckwith and Mary Williams to become man and wife (just three years before Danville reached the high station of seat of a District Federal Land Office). Their son, Hiram W. Beckwith, fatherless at three, grew up under the guidance of his erudite grandfather Amos Williams. Hiram eventually researched and wrote the definitive history of Vermilion County, including a scholarly treatise on area native tribes, along with several other noted historical publications.

CERTIFICATES OF TITLE—Land Patents—signed by, or in proxy by, the President of the United States, would eventually reach each proud new freeholder (opposite). And, if the pioneer farmer prospered, he might return to the Land Office, yearly for a time, with the year's cash surplus from harvest sales to pay for additional tracts adjoining his existing land, enlarging his farm to divide between heirs, perhaps—or to indulge in his own venture at speculation?

Portion of a Page from a Danville Land Office Receiver's Chronologically Ordered Ledger Book

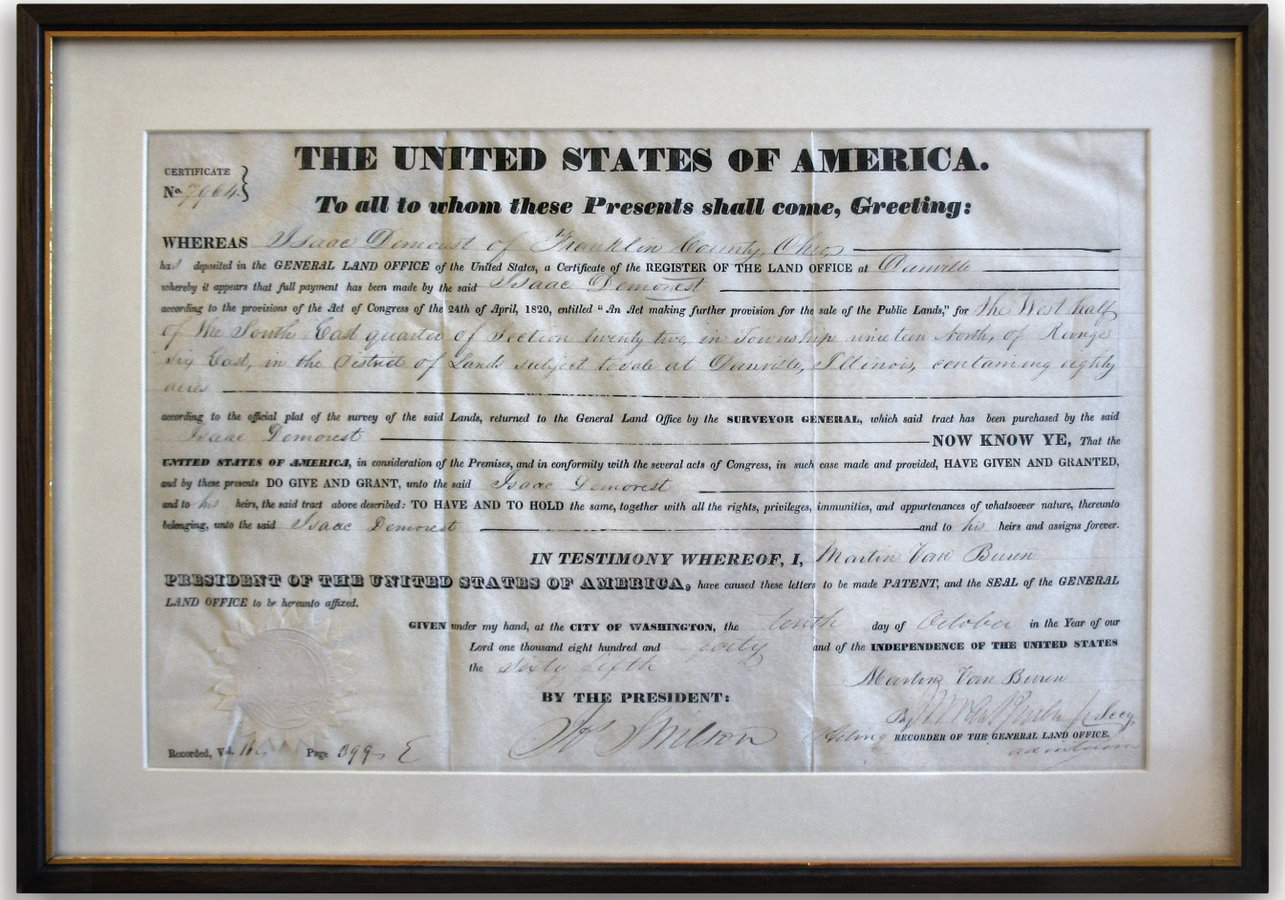
Note that the tract specified in the Land Patent (opposite) was entered here August 18, 1838.



REGISTER OF RECEIPTS issued by the Receiver of Public Moneys at for Lands sold from the day of to day of the same month inclusive.

247

DATE OF RECEIPT. 1838	Number of Receipt.	BY WHOM PURCHASED. Name.	Residence.	TRACT PURCHASED. Section or Part of.		Township.	Range.	QUANTITY. Acres.	100ths.	Price per acre. Dollars.	Cents.	Amount of Purchase Money. Dollars.	Cents.	Amount received in Forfeited Land Stock. Dollars.	Cents.	Amount received in Military Land Scrip. Dollars.	Cents.	
August 10	7959	William B Page	Vermilion		NW	2	20 N	13 W	40	06	1	25	50	07½			50	00	
" 10	7960	Allen Page	"	NW	NW	27	19 N	14 W	40	00	1	25	50	00			50	00	
" 15	7961	Saml Baker	McLean	SE	NW	11	21 N	1 E	40	00	1	25	50	00					
" 16	7962	James Longshore	Iroquois	SW	SE	8	26 N	12 W	40	00	1	25	50	00					
" 18	7963	William Brown & Martin Kennedy	LaSalle		SE	10	30 N	1 E	160	00	1	25	200	00					
"	7964	Isaac Demorest	Trank to Ohio	NE	SE	22	19 N	6 W	80	00	1	25	100	00					See application
Float. 23	7965	Russell Shepherd	Macon Co.	E½	NW	33	30 N	13 W	79	64	1	25	99	55	Floats from No. 5605 per Decn. G.L.O. Sept 13, 1837				
"	7966	John Thompson	Vermilion	SE	SW	36	22 N	14 W	40	00	1	25	50	00					
								519	70				649	62½					



CERTIFICATE No. 7964

THE UNITED STATES OF AMERICA.

To all to whom these Presents shall come, Greeting:

WHEREAS Isaac Demorest of Franklin County, Ohio has deposited in the GENERAL LAND OFFICE of the United States, a Certificate of the REGISTER OF THE LAND OFFICE at Danville whereby it appears that full payment has been made by the said Isaac Demorest according to the provisions of the Act of Congress of the 24th of April, 1820, entitled "An Act making further provision for the sale of the Public Lands," for The West half of the South East quarter of Section twenty two, in Township nineteen North, of Range six East, in the District of Lands subject to sale at Danville, Illinois, containing eighty acres according to the official plat of the survey of the said Lands, returned to the General Land Office by the SURVEYOR GENERAL, which said tract has been purchased by the said Isaac Demorest NOW KNOW YE, That the UNITED STATES OF AMERICA, in consideration of the Premises, and in conformity with the several acts of Congress, in such case made and provided, HAVE GIVEN AND GRANTED, and by these presents DO GIVE AND GRANT, unto the said Isaac Demorest and to his heirs, the said tract above described: TO HAVE AND TO HOLD the same, together with all the rights, privileges, immunities, and appurtenances of whatsoever nature, thereunto belonging, unto the said Isaac Demorest and to his heirs and assigns forever.

IN TESTIMONY WHEREOF, I, Martin Van Buren PRESIDENT OF THE UNITED STATES OF AMERICA, have caused these letters to be made PATENT, and the SEAL of the GENERAL LAND OFFICE to be hereunto affixed.

GIVEN under my hand, at the CITY OF WASHINGTON, the tenth day of October in the Year of our Lord one thousand eight hundred and forty and of the INDEPENDENCE OF THE UNITED STATES the sixty eighth

Martin Van Buren

BY THE PRESIDENT:

Recorded, V. 4 Page 899 E

RECORDER OF THE GENERAL LAND OFFICE.

This document (shown here with each dimension about a third that of the original) is, in effect, a DEED certifying first ownership of the West Half of the South East Quarter of Section 22 in Township 19 North, Range 6 East. This particular 80 acres of land lay then in the edge of prairie on the east side of the Sangamon River Timber, in what is now Piatt County, Illinois. Today, the east side of the village of White Heath, Illinois, occupies the southern half of this tract, and Interstate 74 traffic hums by, close to its northern edge.

When the author's great-grandfather "entered" this tract at the Danville Land Office, on August 18, 1838, he gave his place of residence as his old home, Franklin County, Ohio, for the last time. Subsequent land entries in his name specify the name of the (then current) county of his local residence. (County lines were not finalized until 1841.)

Earlier entries in Danville Land Office Tract Book, Volume 236, show that this settler first entered land along the Sangamon River Timber edge on October 14, 1836, in the year known to have been the peak year of land claims in the history of the United States. In east-central Illinois, that pattern was evident in the late 1830's, as an historic rush to enter land in or near river-bordering timbered lands.

By October 10, 1840, when this certificate was signed, confirming ownership of the tract entered two years earlier, the author's paternal grandmother, born the spring of 1839, would have been a toddler in her father's frontier home when he received it.

Many of the original Land Patents remain stashed away today among descendants' keepsakes, while our (very young) nation still stores in its National Archives the set of the original township plats marked off as sold at District Federal Land Offices, in the presence of pioneers, who, not that long ago, set first plow to virgin soil in today's world-class agricultural region of east-central Illinois (Part 3 opener map).

Tied-together sheaves of the office-set of those duplicate sales receipts, in consecutive order, may still be found in archival storage at Suitland, Maryland. A Top Receipt slip clearly confirms that the first sale recorded at the new Danville Land Office was in Danville Township itself—T 19 N, R 11 W—on August 24, 1831 to . . . Dan Beckwith!

And, the bulky District-Office Tract Books, filled with lines of yet-clear, quill-pen writing (opposite page) still lie stored in the Illinois State Archives in Springfield, copied now, however, onto microfilm—transcribed onto the Internet, as well—for today's genealogists' use.

LAND AS CAPITAL

Speculation Mania, Large-Scale Investments, 1835-36-37

Thomas Jefferson dreamed of a land of "husbandmen," a bountiful, agrarian nation which would raise raw materials to trade across the Atlantic in exchange for manufactured goods from the "work shops" of Europe. ("Notes on Virginia," 1785). From the outset, marine traders, shipbuilders and merchants of the coastal ports, from Wilmington (Del.) and Philadelphia to Baltimore to New York to New Haven to Providence, prospered in the new nation. Appreciable wealth began to accumulate among east-coast merchant-shippers, who emerged as earliest founders of American capitalism.

By the end of the War of 1812, however (a response to hostile English attempts to control Atlantic shipping

and deny American merchants "freedom of the seas"), it had become obvious that the new nation could not safely depend upon seaborne commerce to supply the manufactured goods it needed. Ex-President Jefferson had then to admit publicly—in a letter reprinted in part in the February 24, 1816, Niles Weekly Register—that the peaceful, rural nation he had envisioned would, after all, need to develop its own manufacturing establishments, the position long taken by Jefferson's onetime nemesis, Alexander Hamilton. Jefferson wrote "We . . . conclude that to be independent for the comforts of life we must fabricate them ourselves. We must now place the manufacturer by the side of the agriculturist." In the matter of disposal of the public lands, these two faces of the American character were soon reflected in land purchases—those made by "cultivators of land" and those by capitalist "dealers in land."

To replace post-feudal-Europe's pattern of tenant-worked fields that radiated from a central village, Jefferson dreamed, instead, of independent family farmsteads, evenly dispersed across rectangularly surveyed land, and operated by self-reliant freeholders in a democratic rural society.

This dream, too, was destined to be compromised—by the almost universal passion of immigrants from post-feudal Europe, to own, not merely Land one worked to bring forth subsistence, but excessive Land that could be prostituted to produce revenue without work—Investment Land. In the new America, rich and poor alike were to explore every angle, to induce inanimate Earth-space, LAND, to generate revenue for their own personal enrichment. Large land-holdings, accumulated by absentee investors, often, then, produced the very landlord-tenant institutions which immigrants had sought to escape by coming to America. By the time the bulk of the public lands in Illinois had been sold, land-use had achieved a dual aspect, as a collection of rugged individualist's farms in the Jeffersonian mode, mixed with tenant-farmed estates—a pattern particularly pronounced in the prairie state of Illinois (and fortified by later developments).

THE LOWER NORTHWEST TERRITORY states—Ohio, Indiana and Illinois, "the First Public Domain"—served as trial area, in the *Sale* of public lands, just as it had in the government *Surveys* which had converted the public domain into saleable real estate. Progressive refinement of land-sales laws correlated with the advancing line of settlement, from east to west, across these three states, starting with the Seven Ranges of northeast Ohio, where land was first offered under the Land Ordinance of 1785, at a minimum purchase size of one full, 640-acre Section, and at a minimum cost of $1 per acre. With adoption of the succeeding 1800 law, the minimum-size tract had dropped to half a Section, 320 acres, with a 4-year installment system for payment. Under this law, the state of Ohio reached eligibility for statehood in 1803. As we have seen, by 1832, after subsequent reductions in minimum tract-size, public lands in Illinois could be bought at District Federal Land Offices at a minimum tract-size of 40 acres, and a minimum price of $1.25 per acre, paid on the spot, in hard money, or in bank-loan notes.

The rectangular survey system, which allowed a specific geographic patch of Earth's surface to be uniquely described in a single line of quill-pen writing in an office ledger, its legal, "fee simple" ownership securely established by a routine office procedure—exchange of money for a receipt—served the affluent purchaser of large land holdings with an all-too-easy efficiency. During the 1830's, monopolistic buyers of the public lands in Indiana tied up so many acres at the elevated resale prices imposed by mega-owners that settlement was impeded.

East-central Illinois, too, was a target of impassioned enthusiasm for excessive land acquisition. By the 1830's, several legendary land-booster/agents dealing in Indiana-Illinois land were actively soliciting land investment from east-coast capitalists. *Not all of these promoters were driven entirely by self-interest, however. Some may have felt legitimate awe for the wide fertile lands they were helping to develop. Some of the most successful of these operators tempered their wealth with philanthropies in their later years.*

One such enthusiastic promoter *and* buyer of land in Indiana and Illinois during the 1835-36-37 land boom, Philadelphia publisher *John Grigg,* was a man of diverse life experience. Orphaned in Cornwall at a young age, he went to sea as cabin boy; spent his young manhood on the Ohio and Kentucky frontiers; moved to Philadelphia to learn the publishing business; and, teamed with a partner, established his own, highly successful, publishing house in 1823. The Philadelphia firm of Grigg and Elliot became known for publishing pharmaceutical books, biographies of famous Americans, pirate books for boys, geographies—*and Peck's 1834 Gazeteer of Illinois*.

Along with the latter, another set of maps, "Western States and Territories," republished by his firm, may have spurred John Grigg (already familiar with frontier life) to investigate more closely the area the maps represented. At any rate, he began buying land in quantity (nearly 12,000 acres in the study area alone) just as the 1835-36-37 boom began to build, and he continued to buy in quantity into mid-1836.

In the following year, 1837, the firm of Grigg and Elliot then published, and distributed widely, books and articles, some written by another booster, Henry L. Ellsworth, with his Lafayette, Indiana, land-agent son Henry W. Ellsworth (see below), "hyping" the area, in the hopes, perhaps, of drawing purchasers for some of his (publisher Grigg's) vast Illinois land empire, to pay off on his investments. Historian Paul Gates suggests that "Grigg apparently neither planned to withhold his land for higher prices nor to rent to tenants," the customary alternatives for large-scale investors of the time. One-time cabin boy, wealthy publisher John Grigg, was known in his later years as a philanthropist.

AN HISTORICAL RESEARCHER, leafing through Danville Register John C. Alexander's more-than-a-century-and-a-half-old ledger book, Volume 236, at the Illinois State Archives, Springfield, would come upon a puzzling phenomenon. Land purchasers who stated their place of residence as an east-coast city (or county) dominate the

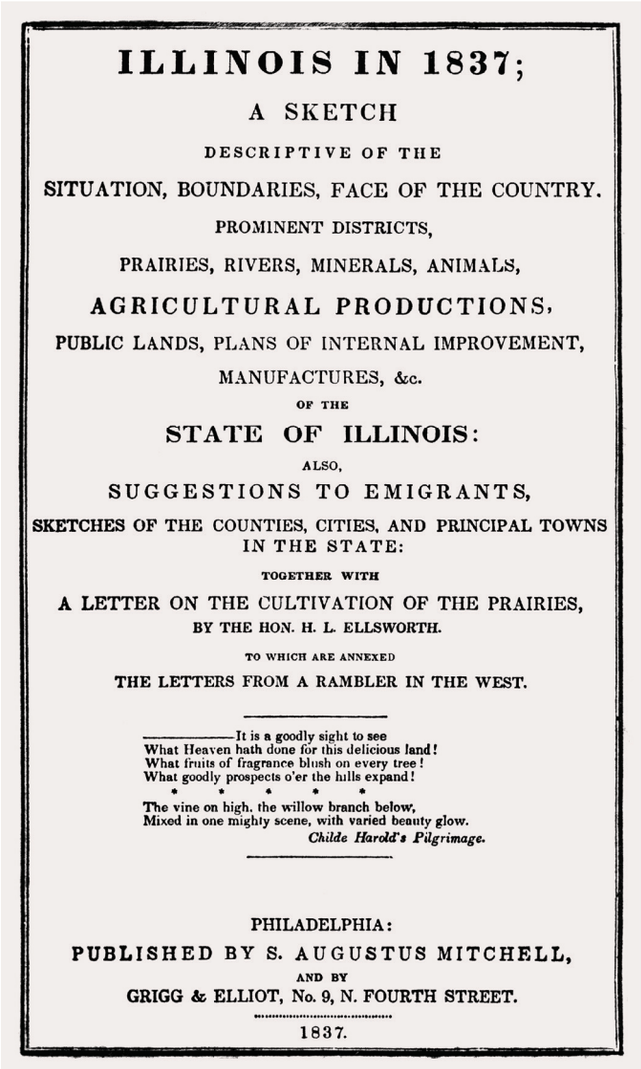
entries penned in consecutively on May 5-6-7, 1836, filling pages 155–160 of the old volume. Moreover—omitting records of sales in the north half of the Danville Land Office district (not included in our study area)—the extent of land represented in this group of entries adds up to nearly 40,000 acres, purchased for a dozen or so east-coast buyers, in just three days, in spring of 1836.

With no written account of the activity at the Danville Land Office so far located, for that Thursday, Friday and Saturday, we can only resort to historical surmise, using the facts that we do know, to suggest a tentative scenario (subject to emendment).

We can surmise with fair certainty that an extraordinary booster, buyer and sales agent for mid-Illinois and Indiana lands, Henry L. Ellsworth, must have been on hand at the Danville Land Office those three days, on a major, partly personal, business mission. Entries suggest that, on those days, Henry L. Ellsworth of the "District of Columbia" bought for himself about 1,200 acres of Danville District land, entering, as well, large acreages for each of four of his wife Nancy's prominent kinfolk, plus a token half-quarter-section (80 acres) for his nine-year-old daughter Annie! Other clients in whose names land was entered at that time include a short roll call of sons of founding fathers, of prominent citizens of Ellsworth's home state of Connecticut, and of graduates of his alma mater, Yale University in New Haven (see chart on page 116). And, on that Friday, May 6th, Ellsworth seems to have taken time off to participate in a school-section-16 auction nearby, bidding successfully for five (5-acre) lots, for which he paid a generous average of $17.50 per acre!

Three generations of Ellsworths made notable contributions to American history.

Oliver Ellsworth, Henry L.'s father, was a delegate from Connecticut to the 1787 Constitutional Convention in Philadelphia, where he served as one of the committee of five chosen to draft the American Constitution. He wrote the Judicial Act that is the basis of the United States Federal Judiciary System; served in the Senate; later was the second Chief Justice of the U.S. Supreme Court to be confirmed by the Senate; then, as diplomat to France, dealt with Napoleon. A lifelong resident and landowner in the upper Connecticut River valley and an investor in land in the royal-grant extension of Connecticut (Western Reserve), Oliver Ellsworth wrote a series of letters to the Connecticut Courant *supporting agrarian causes.*



ILLINOIS IN 1837;

A SKETCH

DESCRIPTIVE OF THE

SITUATION, BOUNDARIES, FACE OF THE COUNTRY.

PROMINENT DISTRICTS,

PRAIRIES, RIVERS, MINERALS, ANIMALS,

AGRICULTURAL PRODUCTIONS,

PUBLIC LANDS, PLANS OF INTERNAL IMPROVEMENT,

MANUFACTURES, &c.

OF THE

STATE OF ILLINOIS:

ALSO,

SUGGESTIONS TO EMIGRANTS,

SKETCHES OF THE COUNTIES, CITIES, AND PRINCIPAL TOWNS IN THE STATE:

TOGETHER WITH

A LETTER ON THE CULTIVATION OF THE PRAIRIES,

BY THE HON. H. L. ELLSWORTH.

TO WHICH ARE ANNEXED

THE LETTERS FROM A RAMBLER IN THE WEST.

———It is a goodly sight to see
What Heaven hath done for this delicious land!
What fruits of fragrance blush on every tree!
What goodly prospects o'er the hills expand!
* * * * *
The vine on high, the willow branch below,
Mixed in one mighty scene, with varied beauty glow.
Childe Harold's Pilgrimage.

PHILADELPHIA:

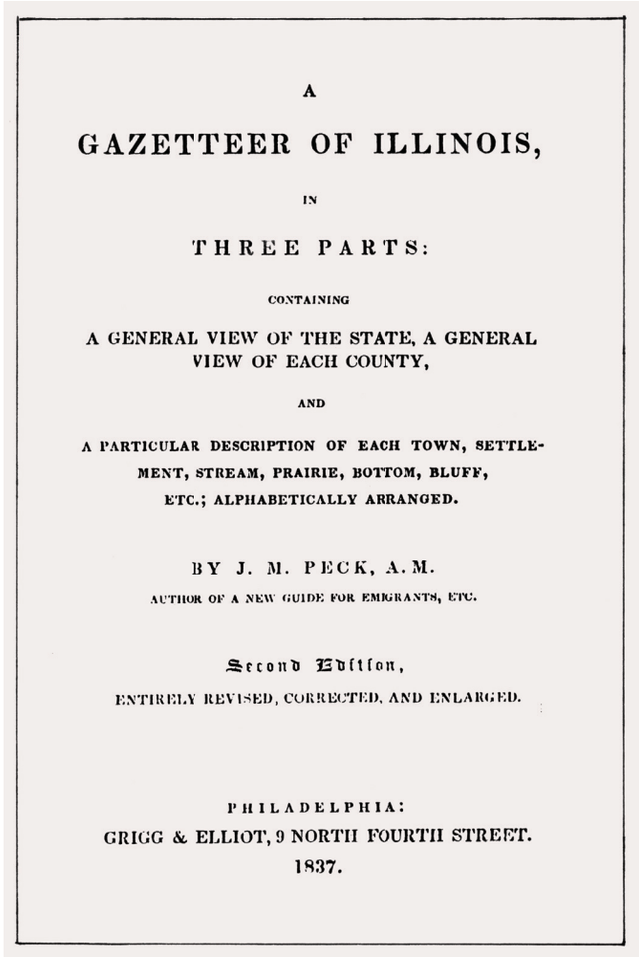
PUBLISHED BY S. AUGUSTUS MITCHELL,

AND BY

GRIGG & ELLIOT, No. 9, N. FOURTH STREET.

1837.

Henry L. Ellsworth, one of Oliver's twin sons (the other became governor of Connecticut), expanded on his father's agenda. As a recent Yale graduate, Henry L. traveled to the northern Ohio Country in 1811, to inspect his family's Western-Reserve land investments. He later circulated a narrative of his experiences. Returning to Connecticut, he engaged in agriculture and law; he was then appointed by President Andrew Jackson as commissioner to superintend settlement of Indian tribes south and west of Arkansas. On the trip west he met and traveled with writer Washington Irving, developing, with



A

GAZETTEER OF ILLINOIS,

IN

THREE PARTS:

CONTAINING

A GENERAL VIEW OF THE STATE, A GENERAL VIEW OF EACH COUNTY,

AND

A PARTICULAR DESCRIPTION OF EACH TOWN, SETTLEMENT, STREAM, PRAIRIE, BOTTOM, BLUFF, ETC.; ALPHABETICALLY ARRANGED.

BY J. M. PECK, A.M.

AUTHOR OF A NEW GUIDE FOR EMIGRANTS, ETC.

Second Edition,

ENTIRELY REVISED, CORRECTED, AND ENLARGED.

PHILADELPHIA:

GRIGG & ELLIOT, 9 NORTH FOURTH STREET.

1837.

him, an enthusiasm for "the Western Lands." Later, as businessman-agrarian in Hartford, he encouraged inventors of farm machinery. In 1835, he was named by President Jackson as the first U.S. Commissioner of Patents. He helped his friend Samuel Morse obtain an appropriation to test feasibility of the telegraph. Because of his extensive work with farmers, Henry L. Ellsworth is sometimes known as "Father of the U.S. Department of Agriculture."

By 1835, Henry L. had set up his son Henry W. in a law office and land agency in Lafayette, Indiana, due north of the Crawfordsville Land Office.

We conclude that, in early May of 1836, coming directly from his son's place of business in Lafayette, perhaps, and before returning to Washington to resume his duties as patent commissioner, Henry L. Ellsworth (after a stop at the Crawfordsville, Ind., Land Office?) had traveled over into Illinois to the Danville Land Office to enter lands in our study area (as shown on the map opposite), a chore he completed in three days—May, 5, 6, and 7, of 1836. He apparently felt that land north of Danville, along the trail toward Chicago, had merit, as he filled in, for his clients, all unsold land in T 21 N, R 11 W, plus the southern half of the township adjacent north. For client Ramsay McHenry, he chose to fill in the unsold prairie at the south edge of timberland already sold along the Salt Fork branch of the Vermilion, land that was destined to become prime agricultural land when cultivation of the prairie sod eventually became practical. *(Another booster-buyer-agent, James McReynolds of the St. Louis area, visited the Danville Land Office that May 7th, adding to his own property at the head of the Kaskaskia timber, and perhaps helping Charles and Richard Underhill of New York City select land adjacent to his).*

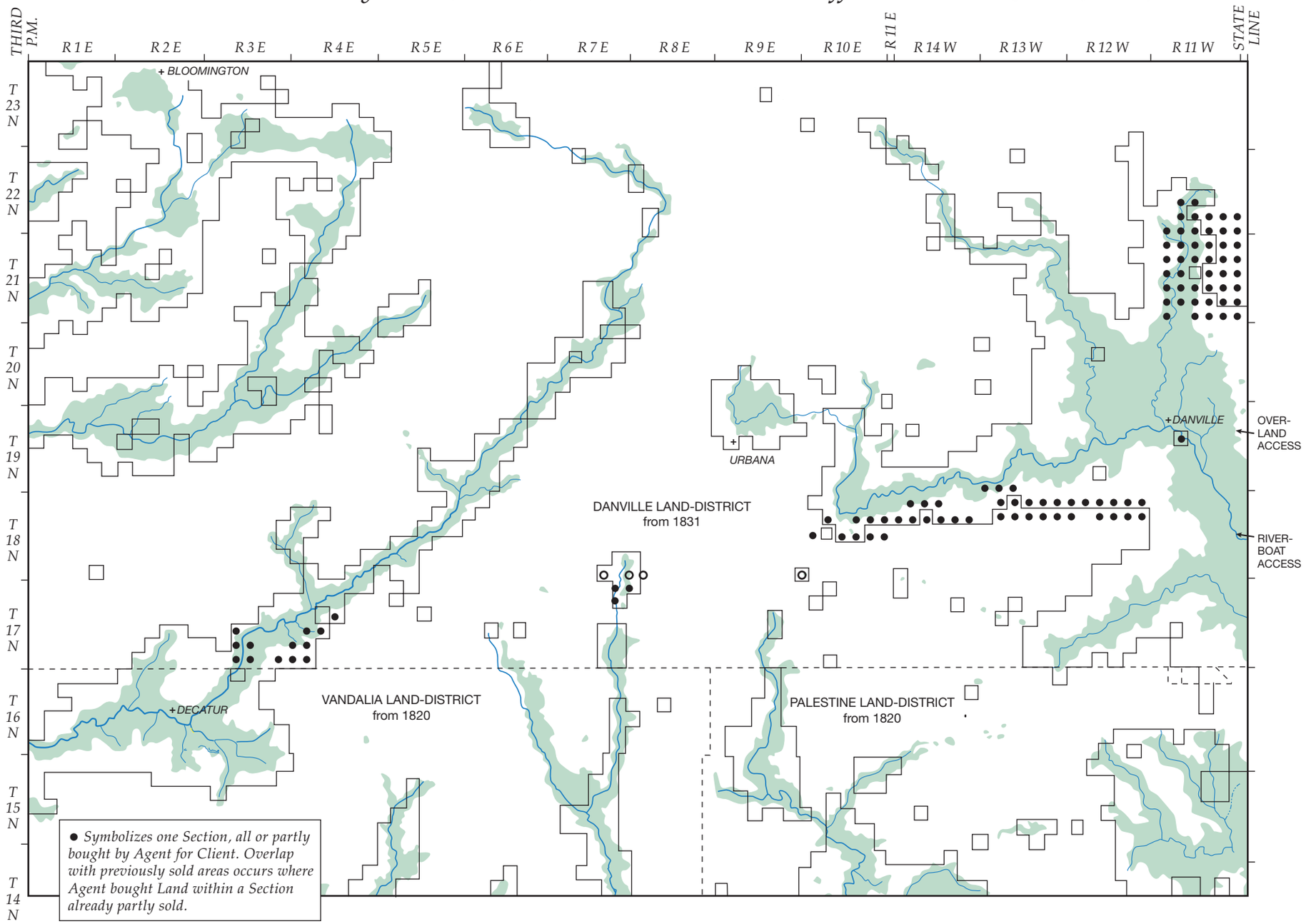
Henry L. Ellsworth continued investing personally in the public lands (across the Mississippi, as well) before and after the closing of the Illinois Land Offices in the mid 1850's. His land-administration style differed from that of publisher-investor John Grigg. *("Ellsworth [one of the great nineteenth-century prairie landlords] . . . knew intimately the details of farming, gave the land and farming business his close supervision and identified himself completely with the development of the prairies" Gates 1945.)* Ellsworth introduced elaborate improvement and share-systems which he advertised as being advantageous to absentee buyers of his lands and to tenants, alike. *In his will, Henry L. Ellsworth named*

Large-Scale Purchasers of East-Central Illinois Land—Presumed Clients of a Land-Booster/Agent Visiting the Danville Land Office May 5–6–7, 1836

acreage	PURCHASER, residence	background of PURCHASER
11,149	RAMSAY McHENRY Baltimore, Md.	McHenry's were (Scotch) Irish-immigrant merchants. Firm of Daniel McHenry & Son [*John*] based in Baltimore. Another son, James, physician, was wartime secretary to Lafayette and, later, Secretary of War to Pres. George Washington. Was Ramsay son of John? He was physician (like uncle[?] *James*, for whom Baltimore's historic Fort McHenry—subject of Star Spangled Banner—is named).
7,240	ISAAC CHAUNCEY District of Columbia	Commodore of U.S. Naval fleet and shipyard in the Great Lakes during War of 1812. Commandant of New York navy yard 1825–32. Navy commissioner to Washington, D.C., 1832.
4,363	ELIHU CHAUNCEY Philadelphia, Penn.	Brother of Isaac. Philadelphia banker. With fellow "Capitalist of Philadelphia," Nicholas Biddle, he engaged in land development projects in Ohio and Indiana.
792	CHAUNCEY A. GOODRICH New Haven, Conn.	Distinguished professor of rhetoric and English literature at Yale. Noah Webster's son-in-law, and his colleague in production of Webster Dictionary.
1,920	ELIZUR GOODRICH Hartford, Conn.	Yale grad. Lawyer, politician, sometime professor of Law at Yale. The Chauncey brothers and the Goodrich brothers were cousins; all were grandsons of third President of Harvard, Charles *Chauncy*. Elizur's daughter married the AGENT, Henry L. Ellsworth (below).
1,195	HENRY L. ELLSWORTH District of Columbia	Son of [second] U.S. Supreme Court Justice. First U.S. Commissioner of Patents, 1835–. Phenomenal booster and AGENT for "Western lands," for their agricultural potential (called "Father of the U.S. Dept of Agriculture"). See text.
4,640	DAVID WATKINSON Hartford, Conn.	English-origin family emigrating to Connecticut, engaged in East Indies trade, banking and manufacturing. A founding family of an aloof American "capitalist class." (historian Barry Levy)
1,840	ROBERT WATKINSON Hartford, Conn.	Brother of David?
1,920	JOHN WHIPPLE Providence, R.I.	Descendant of Capt. John Whipple, who arrived in America from Wales in 1632 and was allotted land in Providence in 1659(?). Merchant family. Two centuries later, this John Whipple of Providence invested in east-central Illinois land.
1,240	JOSEPH S. CABOT Salem, Mass.	Cabots in Salem by 1700. By 1800, Cabot family was "obscenely wealthy" due to privateering during American Revolution, trade in slaves, opium, etc. (historian Vernon L. Briggs)
1,006	GIDEON TOMLINSON Fairfield County, Conn.	Yale graduate and lawyer. Governor of Connecticut, 1827–31. U.S. Senator from Conn., 1831–37. (This purchase, while senator.)

Investment Lands Chosen by a Land Agent for His Wealthy Clients— on May 5-6-7, 1836, at the Danville Land Office

Generalized to the Section, areas outlined here were sold before May 1836. Timber along waterways was preferred.



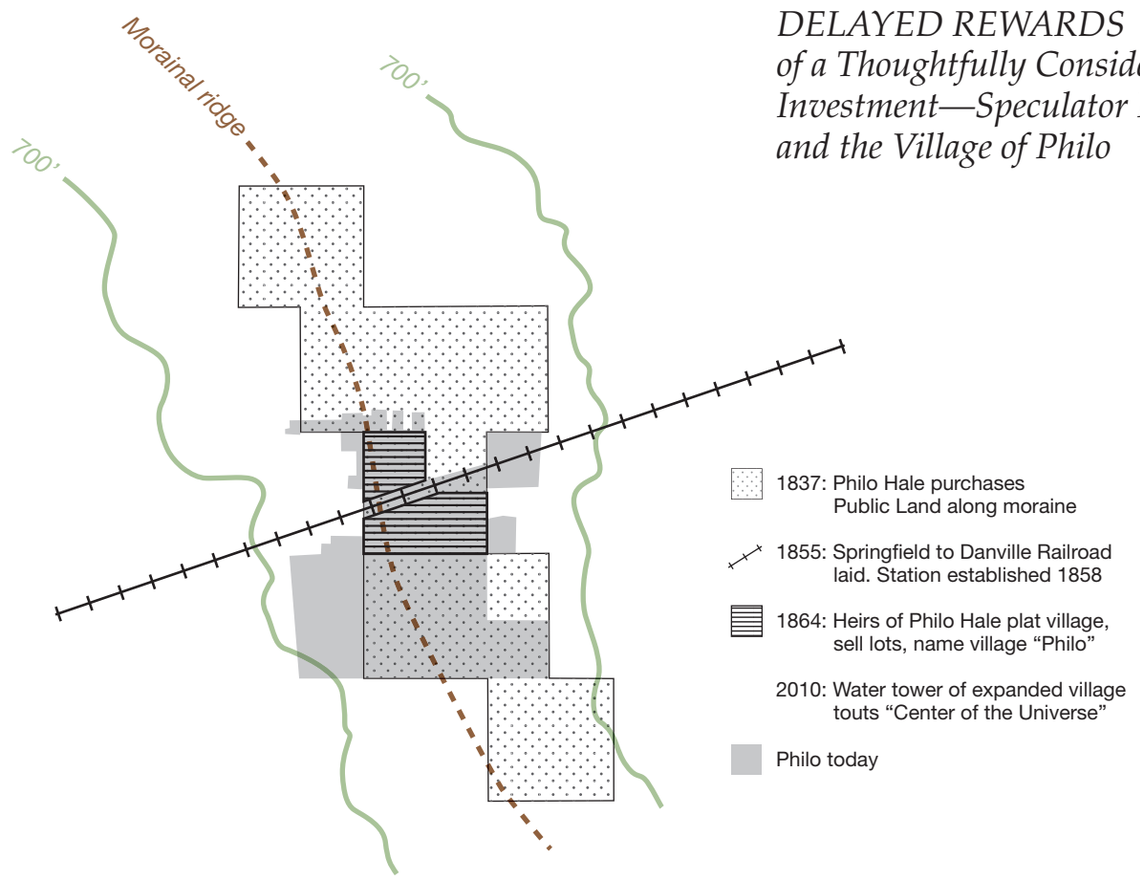
Yale University beneficiary to large acreages of his land empire, including some of his purchases across the Mississippi.

Among other large-scale investors during the 1835-36-37 sales boom, we find that young *Philo Hale,* deserting his family's shipyard on the Connecticut River, moved to central Illinois, where he became a frequent visitor at District Federal Land Offices, investing in a wide scattering of land tracts. Like other speculators of the time, Hale tried to guess at possible routes of the railroads that were being projected for the area, then entered strips of land athwart the calculated roadbeds at strategic locations, hoping to intercept them, ensuring added value to those particular tracts when the railroad finally came through.

Wilmington, Delaware, a significant business and shipping center at the mouth of the Delaware River into Delaware Bay, just downriver from Philadelphia, was home base for a trio who invested in east-central Illinois land during the winter of 1836–37. They were: *Dr. Arnold Naudain* (who had resigned from a seat in the United States Senate seven months prior), *Edward Tatnall* (whose father Joseph was founder of a flour milling business on the Brandywine which had hazarded to supply the American Army during the Revolution) and *Merrit Canby* (son of sugar refiner, etc., William Canby, whose letter to Thomas Jefferson on American manufacturing had elicited the published reply cited earlier). Each tract entered by this group of investors—probably in person by Naudain—was recorded in the land office ledger book divided meticulously into *thirds.* Like Philo Hale, the trio invested in a wide scattering of tracts, but during only two visits to the Danville Land Office, seven weeks apart, in November 1836 and January 1837.

Apparently reworking titles in order to divide their lands separately among themselves, the Naudain, et al., group hung onto their Illinois lands well into the Civil War, neither renting nor improving them—in historian Margaret Bogue's estimation. After 27 years, Merrit Canby sold land he owned at the edge of Urbana to a next-generation speculator, Clark Robinson Griggs (Champaign County resident, presumably no relation to John Grigg), at a price, $25 an acre, that afforded Canby, by then 81 years old, no spectacular gain—considering taxes paid (about 7% per annum)—on his long-held investment. Two and a half years later, Griggs, serving for a short while in the Illinois State Legislature, lobbied intensively to have the projected "Illinois Industrial University" (now the U of I) located at Urbana. One month after the bill passed, Griggs sold his Urbana land to the University for $55 an acre (more than an 80% return per annum). After other such gainful ventures, Clark Robinson Griggs became a railroad executive . . . in Wilmington, Delaware!

NEW-AMERICAN-STYLE Capitalism, thriving on the east coast after the War of 1812, thus surged across the Appalachians in the mid-1830's, invading district federal land offices of frontier Indiana and Illinois. Typically, well-to-do sons of legendary, Revolution-era, founding families paid professional agents to convert large acreages of public land—nominally available to all citizens at the government price of $1.25 an acre—into their own private real estate, which would be available to settlers, only at a price controlled by the new owner, or as rental farmland. Critics of such a system (which allowed investors to accumulate unimproved land and withhold it from purchase by prospective farmers until an expected rise in



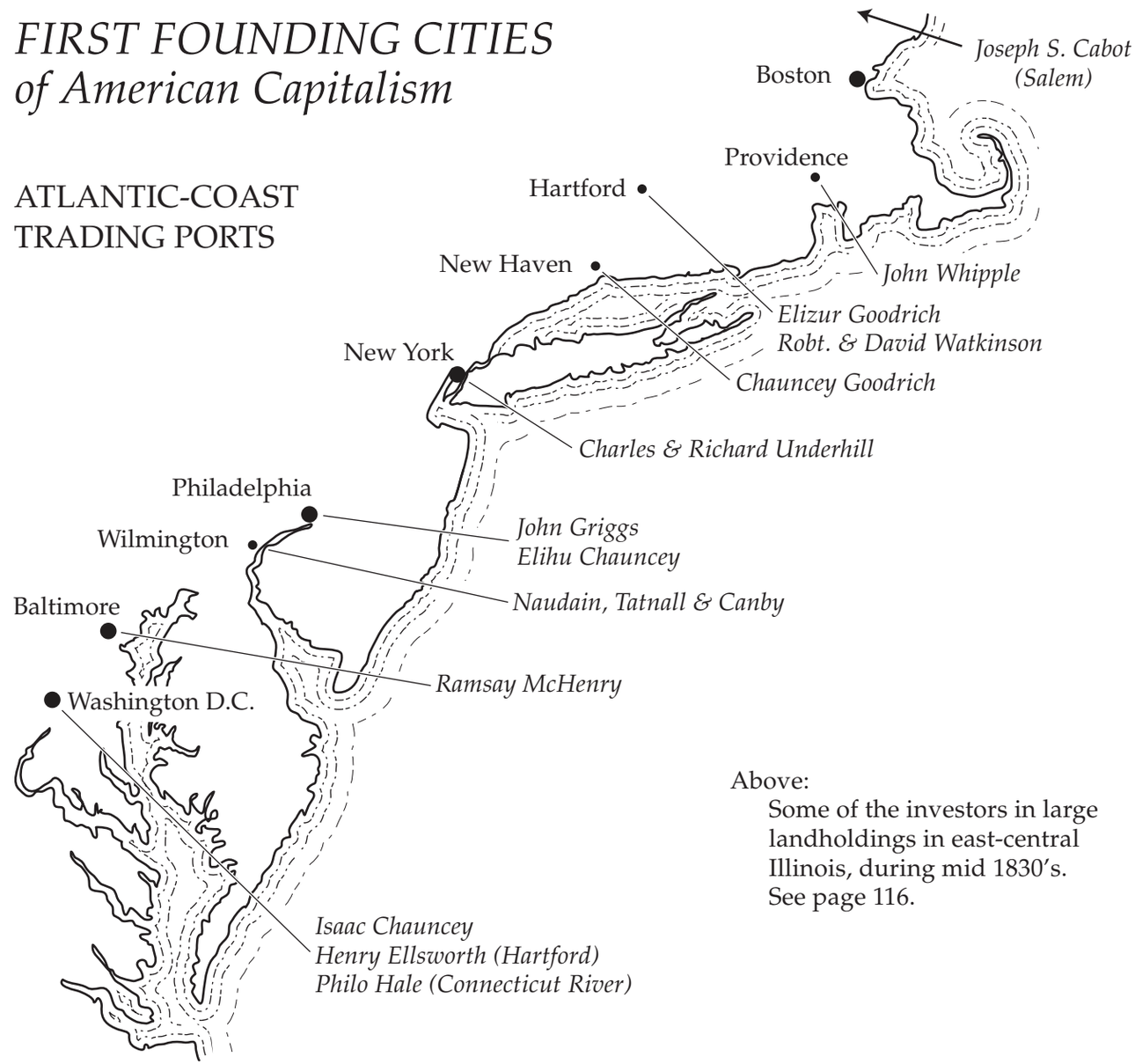
DELAYED REWARDS of a Thoughtfully Considered Investment—Speculator Philo Hale and the Village of Philo

price developed) were unable to bring about a solution to the problem of monopolistic purchase of the public lands. *Rationing* of land-purchase by quantity, through government regulation, seems hardly to have been a practical option, on the volatile frontier, with the red tape involved.

Moreover, it was not only affluent non-residents who appropriated excessive land for revenue. Until regulations in the Specie Circular took effect in August of 1836, anyone could borrow to buy land with bank notes. Many new settlers took that gamble, increasing their holdings beyond the land acreage they could actually use. Thus the "petty resident speculator" played his own part in thwarting realization of Thomas Jefferson's idealized model of a democratic system of land ownership. Perfectly respectable resident settlers were tempted to add unneeded acreage to their holdings annually. Extended adult families, who had arrived at the frontier together, might gradually spread their combined holdings to dominate an entire area. Purchasing land with the aim of intercepting potential railroads was fair game for anyone, as was the platting of never-to-be towns, in anticipation of selling lots at a profit.

Commenting on the frontier speculator, Paul Gates writes, "His motives and his deeds one may deplore, but so characteristically American was he, so dynamic a part did he play in shaping land and cultural patterns, that it is difficult to imagine an American frontier without him."

Historians of the 1835-36-37 public-land-sales boom in Illinois are disadvantaged in their study of speculative buying during that period, by lack of detailed records on full costs entailed in holding such lands over a succeeding period of time. Some analysts estimate that large-scale investments made in the mid-1830's generated, *on average,* only reasonable long-term returns if the lands were eventually sold (Schafer, Bogue), and that settlement in Indiana and Illinois was only temporarily inconvenienced by the feverish activity of eager, monopolistic land speculators during the land-sales boom of the mid-1830's. Nevertheless, a pattern of land tenancy, mixed with freeholder farming, which was established at that time—and amplified during the succeeding speculation boom in the 1850's—holds over into modern times. Tenancy remains a significant factor on the Illinois prairie, where, in the year 2003, 80–85% of farmland was tenant-farmed (ISPFMRA report for Region 5). One might assume that this land-use pattern, which diminishes the old ideal of the owner-operated, family farm, derives entirely from today's commercialization of farming as Big Business, but tenancy has actually been a continuous factor in the Illinois prairie counties since non-residents first played the game of converting large tracts of the public domain into private Investment Land.



Above:
Some of the investors in large landholdings in east-central Illinois, during mid 1830's.
See page 116.

EIGHTEEN HUNDRED AND FORTY ONE was a quiet year for Registers and Receivers in the District Federal Land Offices of Illinois. With public-land sales in depression doldrums, the respected Samuel McRoberts had relinquished his post as Receiver at the Danville Land Office to move on, into national service in Washington, D.C. The last permanent county line to be drawn in the study area separated out parts of Macon and DeWitt counties to form Piatt County, named for the earliest permanent settler at the site of the new county seat. Frontier settlement, temporarily stabilizing in the depression lull that followed the Panic of 1837, had consolidated into cohesive, rural, social communities held together by the commercial and political activities of county seats.

In the grove-and-prairie landscape of east-central Illinois, ancient-trails-become-wagon-roads paralleled the rivers just within the shelter line of timber, protecting horse and traveler alike from the severities of the open prairie. A line of cabins—and soon, frame houses—dotted the timber-edge road, at intervals. Many of the families occupying these farmstead houses in 1841, whether tenant or freeholder, likely were descendants of earlier frontiersmen, who had crossed the Appalachians into the wildernesses of Kentucky or Ohio. Their techniques for survival depended upon wood, water, livestock and the plow.

The climax of this study has been upon the creation in about two decades (1821–1841)—less than two centuries before this writing—of the linear, timber-edge, farming community which became the FIRST expression in east-central Illinois of the epic conversion of a post-glacial Landscape and hunting territory into full-managed-food-producing Land. And at the same time, perhaps, the LAST expression there of the essential, nature-interactive, agrarian way-of-life that preceded the rise of an industrial economy dependent, for the time being, upon the energy stored in fossil fuels, etc.

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Dale H. Lattz, Extension Specialist, University of Illinois, College of Agricultural and Consumer Economics, Urbana–Champaign.

Wayne Temple, Chief Deputy Director, Illinois State Archives, Springfield, Illinois; intermittent communication from 1970–1996.

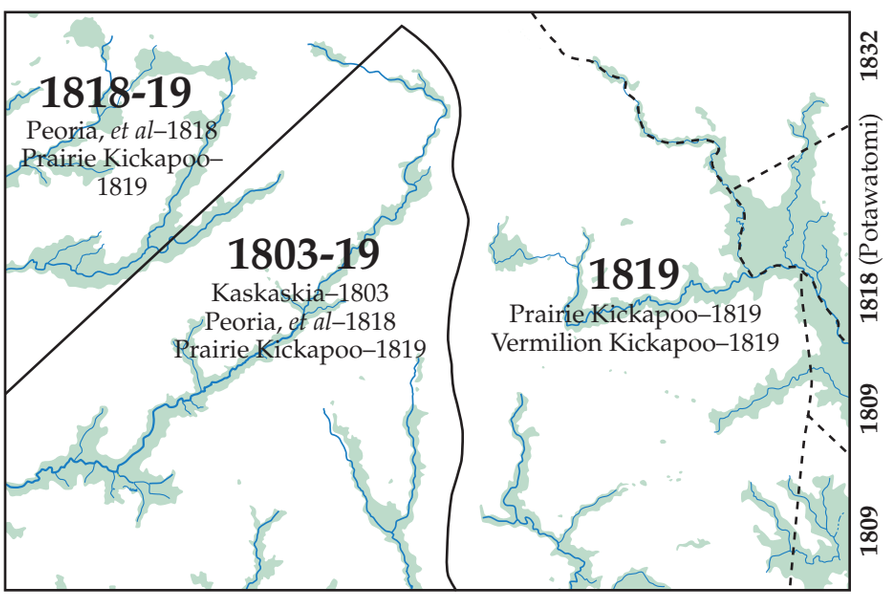
CHRONOLOGIES of CONVERSION: East-Central Illinois, 1803–1835

(Data from Federal Treaties and Land Records, as Plotted on Maps of the Timber/Prairie Landscape)

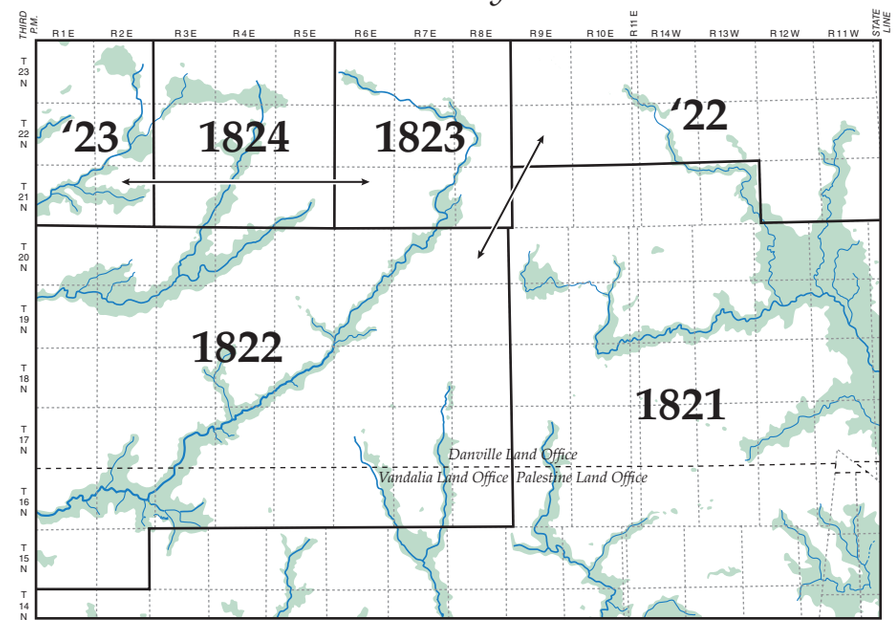
The first lands in the study area to achieve the status of legally-purchased Private Property lay along the edges of the timber which bordered the upper Little Vermilion River. These first-choice tracts commonly included one of the "points" of timber which extended into the prairie along small drainage-ways. The Presidential Proclamation Area which contained these first-bought tracts had undergone perhaps the speediest transformation, from native territory to stock-and-crop private farms, in history. The final Indian treaty releasing these lands had been negotiated with the Kickapoo in the late summer of **1819**. A federal Land District including these lands had been established in May **1820**, with Land Office at Palestine. The area had then been measured and marked by government survey—as marketable real estate—in the spring of **1821**. Presidential Proclamation had declared the area subject to a four-week initial auction-sale in the early winter of **1822**, during which time twenty-three buyers purchased land there (plus two buyers of land at the nearest-to-the-north lobe of the *Big* Vermilion timber—"Butler's Point").

While much of the land surveyed in 1821 was proclaimed subject to sale the year following survey, up to eleven years elapsed between survey and sales in other areas. Newly proclaimed sales areas progressed inland from major, water-transport rivers (the Mississippi and the Ohio/Wabash) toward the inner "headwaters" region.

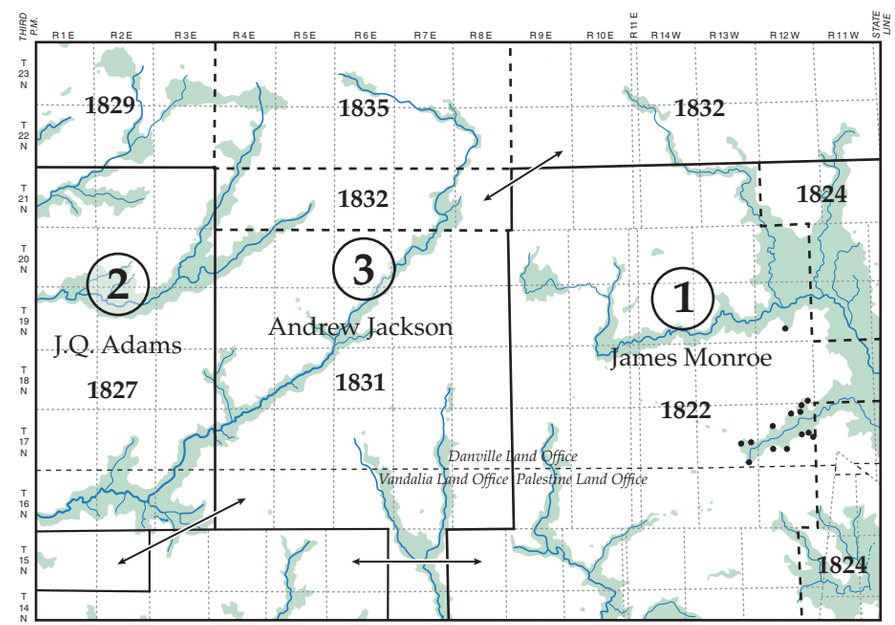
1. Indian Land Cessions



2. First Government Surveys



3. Presidential Sales-Proclamations



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