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The Wealth of Nature: Lumber

Where Value Comes From

The grain elevator was not the only place in Chicago where the products of rural nature entered the urban market to become commodities. Elevator receipts were an extreme case of what the market could do because grain so easily seemed to lose its physical identity while passing from hand to hand. But the process was far more general. Rural products entered Chicago in such immense quantities that their sheer concentration encouraged people to think of them as symbolic abstractions—as commodities defined by their passage through the market. When post–Civil War boosters waxed eloquent about Chicago, they declared their city to be not merely the greatest grain market in the world but also the greatest cattle market, the greatest hog market, the greatest lumber market, and so on. "Chicago," exulted the city's chief booster in 1870, "which less than thirty years since imported grain and provisions of all sorts from the East . . . is now in grain, lumber, live stock, and provisions, chief market of the world."[1]

Chicago's most striking trait in the latter decades of the nineteenth century was its extraordinary ability to trade commodities with most of the Great West, from Michigan and Ohio to Montana, Nevada, and New Mexico. All western cities served as markets for their hinterlands, but Chicago did so with greater reach and intensity than any other. By assembling shipments from fields, pastures, and forests into great accumulations of wealth, the city helped convert them into that mysterious thing called capital, what Karl Marx identified as "self-expanding value."[2] As

the city's population increased, as its buildings expanded out onto the prairies, and as its factories and warehouses spewed forth a seemingly endless stream of goods, so did its capital—which served as the symbolic representation of all these things—continue its preternatural growth.

The railroad funneled commodities into the city, but it did not create their intrinsic *value*. Some portion of that value, as Marx would surely have argued, was "produced" by the human labor that had transformed prairies into wheat, forests into lumber, livestock into meat. For Marx, as for other classical economists who followed Adam Smith in embracing the labor theory of value, every economic good acquired its worth "only because abstract human labour [was] objectified or materialized in it."[3] Human hands and human sweat were the catalysts that brought the raw materials of first nature within the bounds of the human community and fashioned them into goods that people could use or exchange. As the end result of this process, capital was nothing if not the product of social relationships. Each of the city's commodities had been produced by human beings facing each other in the tumultuous relationship whose name was market: farmers and grain traders, cowboys and cattle barons, lumberjacks and lumbermen, all struggling over who would control the product of their collective work.[4] Indeed, the buying and selling of wage labor was among the most important innovations that distinguished Chicago and the lands around it from the Indian landscape that preceded it. Without such labor, the economic and ecological transformation of Chicago's hinterland would have been neither so rapid nor so profound as it was.

But the labor theory of value cannot by itself explain the astonishing accumulation of capital that accompanied Chicago's growth. Human labor may have been critical to planting, harvesting, and transporting the grain that passed through Chicago's elevators, or to logging, driving, and milling the lumber in its yards, but much of the value in such commodities came directly from first, not second, nature.[5] The fertility of the prairie soils and the abundance of the northern forests had far less to do with human labor than with autonomous ecological processes that people exploited on behalf of the human realm—a realm less of *production* than of *consumption*. In nature's economy, all organisms, including human beings, consumed high-grade forms of the sun's energy—foods—and transformed them into low-grade ones. Although plants might convert the sun's energy into usable carbohydrates, and animals might then concentrate that stored energy in their flesh, they all finally drew their sustenance from the light of the nearest star. The abundance that fueled Chicago's hinterland economy thus consisted largely of stored sunshine: this was the wealth of nature, and no human labor could create the value it contained.[6] Although people might use it, redefine it, or even build a city from it, they did not produce it.[7]

Chicago and other cities of the Great West grew within the ecological context of what the historian Frederick Jackson Turner would have called "frontier" conditions. Despite all the ambiguities and contradictions that have bedeviled Turner's frontier thesis for the past century, it still holds a key insight into what happened at Chicago in the years following 1833.[8] The "free land" that defined Turner's frontier was important not because it was "empty" or "virgin" or "free for the taking"—the Indians, at least, knew that it was none of these things—but because its abundance offered to human labor rewards incommensurate with the effort expended in achieving them. One earned great wealth from the western soil less because one expended great labor upon it than because the soil itself was already so rich. Unexploited natural abundance was the central meaning of Turner's frontier.[9] The land might have been taken from Indians, its profits might sometimes have been expropriated by absentee landlords, its small farmers might on occasion have suffocated beneath a burden of accumulating debt, but much of what made the land valuable in the first place had little to do with the exploitation of *people*. The exploitation of *nature* came first.

The United States took from the Indians an ecosystem that when viewed through the lens of the marketplace already held great treasures. The attraction of "free land" was that people could turn its natural wealth into capital with less labor than elsewhere. Settlers worked immensely hard to clear forests and plow fields, of course, but the land rewarded their labor far more generously than in older, more populous places. The settlement of the countryside, the growth of the city, and the expansion of the market that linked them, all rested on the basic premise that people could and should exploit the wealth of nature to the utmost. In the process, some people might gain more than others, certainly, but human gained over nonhuman most of all.

The social relations of production that yielded this result themselves depended on still more encompassing ecological relations of *consumption*. In any ecosystem, only the sun produces. All other beings consume in a long chain of killing and eating that stretches from the tiniest microorganism to the most aggressive carnivore. Since no organism can make energy, each must do its best to *store* it, accumulating a stockpile for use when the sun will not be so generous with its gifts. The same is true of human society: most of the labor that goes into "*producing*" grain, lumber, and meat involves *consuming* part of the natural world and setting aside some portion of the resulting wealth as "capital." To apply for a moment

the language of economy to the ecology of the Great West, Chicago's explosive growth was purchased at the expense of prairies and forests that had spent centuries accumulating the wealth that now made "free land" so attractive. Much of the capital that made the city was nature's own.

From Forest to Prairie

The tallgrass prairie was one habitat that people sacrificed to human progress; the north woods was another. Although Chicago itself was at the edge of the grasslands, with prairies and scattered oak-hickory groves stretching for hundreds of miles to its west, Lake Michigan gave it easy access to the very different, densely forested country lying a hundred or more miles to the north. The lake's north–south orientation meant that it cut across—and so connected by water—radically different ecosystems. Sailing north from Chicago along the Illinois–Wisconsin shoreline, one initially passed a countryside of tall grasses and oak openings. Somewhere around Milwaukee, as the more northern climate became cooler and moister, the oaks and grasses gave way to a wetter and richer forest dominated by elms, basswoods, and sugar maples. Farther north still, near Sheboygan, the elms and basswoods became less common and gave way in turn to maples, hemlocks, and yellow birches, the classic mixed-hardwood forest of northern Michigan, Wisconsin, and Minnesota. On the hillsides, and where soils were drier, sugar maples became the dominant trees of the forest, forming dense canopies beneath which few other plants could grow. In the valleys, on north slopes, and where soils were heavier and wetter, hemlocks and yellow birches became more common.[10]

Approaching the heart of the north woods, one also began to see enormous conifers, some well over a hundred feet tall, pushing airy crowns high above their deciduous neighbors. These were white pines, and they more than any other tree were the lords of the north country. Often standing alone amid the more common hardwoods, white pines were most numerous on sandy soils where they could form thick glades whose needled floors and sparse ground cover contrasted markedly with the hardwood forests. The tree was among the most widely distributed pine species in the country, and could be found from almost the edge of the Great Plains all the way to New England. There, Thoreau could remark of it that "there is no finer tree." Visiting a grove near Concord, he said of the white pines that they were "like great harps on which the wind makes music."[11]

People visiting the Great Lakes forest at the middle of the nineteenth century rarely expressed such romantic sentiments about the tree, but they almost invariably noted it. Their descriptions make duller reading today than Thoreau's, but have the virtue of revealing an un-Thoreauvian though very common American way of looking at the landscape. "The land," wrote one traveler in 1852 of the country around Manitowoc, Wisconsin, "is heavily timbered, generally, with pine, oak, maple, and other varieties. . . ." To perceive the forest as this traveler did through the lens of that word "timber" was already to shift into the domain of resources, commodities, and second nature. The object of such language became clear as the description continued: "The lumber trade from this region is extensive, and a source of gain to the inhabitants."[12] When most nineteenth-century Americans saw a white pine, they could summarize their reaction with a single, compelling word: "lumber." No other tree was so highly prized. In a forest such as Manitowoc's, it was the only one worth sending to the sawmills.

The tree's virtues were many. Growing steadily to produce an exceptionally even-grained wood, a typical white pine in the Great Lakes region averaged fifty feet in height by the time it was half a century old and, as one forester declared, would continue "its growth in thickness with a most remarkable uniformity to a great age (200 years and more)."[13] At full growth, it could attain a height of over two hundred feet.[14] More important for those who saw in it the studs and joists of buildings, its tallness was matched by the straightness of its trunk, and its tendency to drop its lower limbs as it grew. Mature trees might rise fifty or more feet before spreading out their branches. The really large trees had trunks ranging up to six feet in diameter, which meant that their heartwood was beautifully clear and without knots. So common were these large trees, wrote one traveler, that "logs less than three feet in diameter are counted 'under size' by many lumbermen."[15] Better still, the wood was soft and light enough that one could easily work it with primitive sawmills and simple hand tools. And yet it was also very strong. "Being of a soft texture and easily worked," wrote the preeminent nineteenth-century historian of Great Lakes lumbering, and "taking paint better than almost any other variety of wood, it has been found adaptable to all the uses demanded in the building art. . . . No wood has found greater favor or entered more fully into supplying all those wants of man which could be found in the forest growths."[16]

But the white pine had another, less obvious, characteristic that mattered even more to the people who wanted to turn it into lumber: unlike the hardwoods that surrounded it, it floated. In a northern landscape that

still lacked railroads, only water could move so large and heavy an object as a sawlog for any great distance. Fortunately, the same climate, glaciers, and impermeable bedrocks that had created soil conditions favorable to forest growth had also left the north woods with an intricate network of lakes, rivers, and streams. If one could only get the trunk of a pine tree to the bank of a major stream, water would do the work of carrying it to mill and market. Most of the timber-bearing rivers and streams of upper Michigan and northeastern Wisconsin flowed into Lake Michigan. With its northern end in the forest and its southern end three hundred miles away in the prairie, the lake was a natural corridor between two ecosystems. At one end were prairie people desperately short of trees; at the other, forest people who had more trees than they knew what to do with. (Farther west, the Mississippi had a similar north–south orientation between forest and prairie, and would play a similar role.)

The fertile soil of the prairie made it a wonderful landscape for farmers, but its lack of timber posed serious problems for people who relied on wood to partition their agricultural landscape. Because they realized this, early Illinois settlers had kept close to the margin between wooded stream courses and the grasslands where they meant to plant their crops. All too soon, the prairies proved to have too little timber to sustain a population of would-be farmers. Given its strength, plasticity, and ease of use, wood was second only to soil in its importance to the farm economy. Without it, houses, barns, and corncribs—not to mention churches and schools—were almost impossible to construct. Most of the tools and machinery with which farmers worked their land were made with it in whole or in part. It supplied the wagons that allowed crops to move to market, and the fences that kept livestock from straying where they were not wanted. It heated homes, cooked meals, and supplied the energy that ran steam engines. No raft, boat, or railroad could be built without it. Lacking a ready supply of wood, no town could come into being or aspire to become a metropolis. As the Chicago-based *Northwestern Lumberman* reported in 1880,

> Every new settler upon the fertile prairies means one more added to the vast army of lumber consumers, one more new house to be built, one more barn, one more 40 acres of land to be fenced, one more or perhaps a dozen corn cribs needed. But it means more; it means an extension of railroad lines with the vast consumption of lumber consequent thereupon; it means an additional incentive to other projected settlers to take farms near the first comer; it means churches, school houses and stores, sidewalks, paved streets and manufactures, and it means new channels of enterprise constantly opening which add to the yearly increasing demand for lumber.[17]

Wood was the foundation of all previous American prosperity, and of no tree was this more true than the white pine. If prairie was to become farmland, its inhabitants would have to have pine.

For all these reasons, Americans who contemplated the future of the Great West at midcentury understood that settling the western prairies meant cutting the northern forests. Most saw the need to cut white pine as a first step toward establishing farms in the north country as well, and so it was easy to imagine a reciprocal and complementary development of the two areas. Prairie farmers could raise crops more quickly than northern ones, who would need to purchase food while they were clearing their land of trees. Trade between the two would thus be the perfect way to bring prosperity to both. "The northern farmer," wrote a Green Bay correspondent of the Wisconsin State Agricultural Society in 1860, "is *ex-officio* a lumberman; the southern farmer, living in the 'fat of the land,' has more than he needs; and commerce thrives in bearing to and fro the fruits of the reaper and the axe, which they all are in need of."[18]

Contemplating the vast extent of the western grasslands, people began to conceive of the entire region as if it were a single productive unit. New economic relationships would bridge old ecological boundaries to the benefit of all concerned. "We cannot but imagine the valley of the Mississippi," wrote the editor of a Wisconsin lumber journal in 1873, as "a huge farm with a very small grove in the northeast corner."[19] The happy geographical conjunction of prairie and forest could not be the result of mere chance; rather, it was yet another sign that manifest destiny was showing its hand. "We are ashamed," wrote a Minnesota booster, "that we ever distrusted Providence, or suspected that our munificent Maker could have left two thousand miles of fertile prairies down the river, without an adequate supply of pine lumber at the sources of the river, to make those plains habitable." By using the waterways to float pine to its "natural" market, Americans would join two regions that had formerly been isolated from each other and, in so doing, create a landscape of mutual advantage. What might happen to that landscape if and when the white pines finally gave out was not at first a cause for much concern: after all, providence would see to that. As the same booster declared, "*Centuries* will hardly exhaust the pineries above us."[20]

If Lake Michigan was the corridor along which white pine lumber would flow from the forests of western Michigan and northeastern Wisconsin to the grasslands of Illinois, Iowa, and points west, it was also the funnel that would direct that flow through the city of Chicago. Once again, the city benefited from the intersecting geographies of nature and capital. On one side, Lake Michigan had given it a harbor where the northern lumber ships could unload their heavy burdens onto the waiting docks. On the other side, the spreading fan of the canal and the railroad network pointed toward the heart of the treeless country, putting the city in immediate contact with nearly every western community where tallgrass prairies were becoming farms. If the weight and bulk of lumber meant that only water and rails could move it profitably in large quantities, then no other city in the Great West was better situated to become its chief depot. When the 1848 opening of the Illinois and Michigan Canal doubled Chicago's lumber receipts in a single year, the event was a clear portent of things to come.[21] Ecology and economy had converged: the city lay not only on the border between forest and grassland but also on the happy margin between supply and demand.

At least until the end of the 1870s, the vast bulk of Chicago's lumber came floating to it via the lake.[22] Indeed, the entire journey of white pine from forest to sawmill to city yard traced a clear annual cycle whose rhythms followed the seasonal movements of water. Logging was a winter activity, roughly counterpointing the agricultural year.[23] Crews moved into the woods during November and December, just as the grain harvest drew to a close, and just as the rivers and lakes began to freeze. They labored among the trees until plowing time, in April or May when the waters had begun to flow again. In many cases, the men who worked in the camps—and they were almost all men—were the sons and husbands of farm families trying to earn cash income to supplement the produce of the farm. Most were immigrants to the region, initially from New England—whether Yankees, French Canadians, or British immigrants—but later from the wooded countries of northern Europe, with Germans, Irishmen, and Scandinavians contributing a growing share of the work force.[24]

The companies for which they worked took many forms. Some were small independent operations either managed by a single entrepreneur or run cooperatively, and these often contracted with sawmills or absentee landowners to cut trees on a particular tract of land. Larger companies with their own lands might hire crews directly, taking them on as employees for the season. A single logging crew in the 1850s was rarely larger than fifteen men. Average crew size increased dramatically during and after the Civil War as the organization of lumbering became more corporate, until camps of fifty or even a hundred were common. During the early years, the men lived in a crude log structure consisting of a single large room with an open, chimneyless fire in the middle, plank "deacon's seat" benches surrounding it, and shared bunk beds, each sleeping two or three men, stacked against the walls. Come evening, the men hung their wet clothes to dry in the smoke-filled rafters, ate their salt pork and beans, and spent the night quietly struggling with their sleeping companions over which way the group would face. All romantic images to the contrary, it was anything but a glamorous life, though conditions did become more tolerable with time.[25] Logging camps underwent steady improvement as the years passed, until by the 1880s they typically consisted of several buildings with moderately comfortable living quarters.[26]

Logging took place in the winter partly because workers were more readily available when there was less competition from farms, but even more because the huge white pine logs could be moved only during the cold months of the year.[27] Many of the poorly drained northern forests were too boggy for effective hauling when the ground was unfrozen. With only horses, ox teams, and people to supply motive power, the crews moved logs by flooding skidways with water, which froze to a glaze ice that could convey even the largest loads. After toppling the trees—axes continued until the 1870s to be more popular than saws for this purpose—teams of men stripped away their branches and cut them into manageable lengths, usually ranging from about twelve to sixteen feet.[28] Workers branded each log with a mark indicating who owned it, and then hooked it to a chain and pulled it by ox or horse team to a skidway.[29] Using block and tackle, the men proceeded to stack ten thousand or more board feet of logs onto sleds that consisted of little more than a platform resting on two pairs of runners, with chains to hold the load in place. Hauling the sleds along the icy roads was relatively easy on the flat, but trickier on the upgrade, where additional animals were often needed, and potentially catastrophic on the downgrade, where a runaway vehicle could threaten the lives of horses, oxen, and men alike. Careful icing and sanding were critical wherever the way became steep.

The journey came to a temporary halt where the skidway reached the banks of a stream. There, the men unloaded the logs from their sleds and piled them in huge stacks as close as possible to the frozen water. The task of piling was particularly dangerous, and all too many of the "top-deckers" who coordinated the work by standing astride the heap died or suffered terrible injuries from being crushed when the load shifted. Once they had finished this work, however, there was little more to do with the piled logs for the rest of the season. The logs remained stacked beside the ice and did not move again until melting snow filled the river with the frigid black waters of the spring floods.

Water again: nothing was more essential to the success of the year's work than the two or three weeks in early spring when the accumulated snow of many months recommenced its long journey to the sea. During most of the year, the vast majority of lumbering streams in the north country did not contain enough water to carry anything like their huge burden of floating logs. If too little snow fell during the winter, it was not only hard to drag logs along the bare skidways but impossible to float them on the streams. Few things more worried lumber operators than how much snow the winter would bring. Trade journals from January to April were filled with speculation about how weather would affect the year's output.[30] "From all we can hear," wrote a worried Chicago dealer to his Michigan partner in January 1858, "the winter has thus far been unfavourable for lumbering any where [?] for want of *snow.*"[31] Those who worked the upper reaches of a stream, where only a small area contributed runoff to the spring freshets, felt particularly anxious as they eyed the season's snowfall.[32] After a bad winter, most of the season's cut might wind up remaining next to the streams for over a year, with potentially devastating effects on the company that had felled it.

In good years, on the other hand, the coming of warm weather signaled the time when crews of men (many of whom had been without work for several weeks between the beginning of mud season and the arrival of the floods) headed down the streams to shepherd the logs on their journey. After shoving the piled timber into the water, the men walked and floated downstream amid the dull roar of grinding logs, doing their best with pike poles and "peaveys" to keep the mass moving.[33] It was an awesome task, fraught with great dangers and difficulties. As one contemporary observed, "If the water is high, the logs come down by thousands upon thousands, rushing, clogging up, breaking away again, piling upon each other, and requiring the constant efforts of the drivers to keep them on the go."[34] In the shifting chaos of the crowded river, death awaited any worker careless enough to fall into the water.

The worst fear of the men was that a few logs might become caught at a shallow or narrow place in the river, causing thousands of others to back up behind them in the nightmarish tangle known as a logjam. Logs might pile up for miles behind such an obstruction, overflowing the river's banks, destroying structures on shore, and wreaking havoc with the forward movement of the drive. Such occurrences were all too common, and certain locations became famous for them. The 1869 jam at Chippewa Falls, Wisconsin, for instance, backed up fifteen miles from its front, stood thirty feet high in some places, and reportedly contained something like 150 million board feet of timber. More impressive still was the 1888 pileup on the Menominee River, where over half a billion board feet of timber got stuck.[35]

Jams—and the process of breaking them up—were among the most dramatic and colorful events in all lumbering. They received great play in the newspapers when they occurred, and have gotten more than their share of attention from folklorists and historians ever since. The critical moment of a jam came when a lone daredevil, stripped to his shorts with a rope around his waist, worked his way into the growling mass to release the last few logs. As the jam lurched forward and gave way, his comrades on shore pulled on the rope with all their might to haul him ashore. With luck, he usually survived. But breaking a big jam generally involved far more than risking the life of a single hero. Large numbers of men might have to work for days or weeks on the river, dynamiting strategic locations and using horses to pull logs onto shore to weaken the obstruction. Lumber companies might have to pay thousands of dollars for wages and equipment to get the drive moving again, while often as not their mills sat idle downstream. By the late 1860s, companies were forming associations for the express purpose of breaking bad jams, and these organizations eventually became models for efforts at industrywide cooperation during the last quarter of the century.[36]

The final destination of the log drives in western Michigan and northeastern Wisconsin was Lake Michigan. There, where major rivers flowed into the lake, clusters of sawmills began to appear during the 1830s and 1840s. At a few locations, these had grown into substantial mill towns by the Civil War. The earliest lumber-milling district in Michigan grew up in the eastern part of the state, at Saginaw Bay on Lake Huron, where one of the largest river systems in the lower peninsula dropped its load of logs. Although some of the lumber produced by the Saginaw mills found its way to Chicago, most of it traveled east, toward Ohio, New York, and the Erie Canal.[37] The mill towns that fed Chicago's market were all to the west of Saginaw, and were scattered along the shores of Lake Michigan at places like Grand Haven, Whitehall, Ludington, Manistee, Traverse City, and still others whose names are today almost forgotten. Some mill towns, like Green Bay, Wisconsin, ran out of timber supplies early and had ceased to be major lumber districts by the 1870s. Others, like Muskegon, in the lower peninsula of Michigan, and Marinette-Menominee, on the Wisconsin–Michigan border, would by the 1880s become the predominant milling centers of the region.[38]

The logs that the rivers deposited at these cities' doors had to undergo a series of steps before they were ready for the next leg of their journey. Since the spring drives typically involved logs cut by many companies and destined for several different sawmills, the first problem was to sort out which logs belonged to which owners. This job was typically performed by a single organization known as a "boom company" that was collectively owned and operated by all the major mills on the river. Boom companies had evolved in Maine and Pennsylvania as a way to share the expense of building and managing the dams, booms, and holding basins that were needed while logs were being sorted. They also paid the wages of the men who did this work.[39] As boom companies expanded on major

rivers like the Muskegon and the Menominee, they eventually became the most powerful economic forces of their region. Ultimately, some even regulated the flow of the river itself to aid the drive. In 1893, for instance, when the Menominee River experienced one of its driest seasons ever, only the careful release of water from boom company dams allowed the drive to take place at all.[40]

Once the boom company had delivered logs to their proper mills, the time finally came to turn them into lumber—boards of standard lengths and dimensions. The peak period for sawing, unlike logging, came after the floods, when mills received a new supply of sawlogs, lake navigation opened, and merchants could again try to satisfy the pent-up demand of prairie buyers. Early mills used gangs of muley (rip) saws mounted on light vertical frames to cut several boards at once. These were gradually replaced by circular saws, which predominated in Great Lakes milling until the last couple decades of the century, when more efficient band saws began to appear.[41] Sawing involved much waste: in the early years, until perhaps the late 1870s, only the finest "clear" parts of the log were retained after milling. The rest were either used for fuel or discarded. Muley and circular saw blades were wide, so the cut they made (the "kerf") consumed a lot of wood, often amounting to one or more inches out of every log. Before the introduction of the much thinner band saw, perhaps a third of the wood in each sawlog became waste, whether as mill scraps or sawdust. Much of it wound up back in the river and contributed to silting and shoaling, which gradually became hazardous to navigation. Once cut, the lumber was usually loaded directly onto the ships that carried it to market. It rarely had much time to dry at the mill, so it arrived in Chicago and other markets still quite green.

The Business of Lumber

No place was more important in coordinating this massive movement of water, men, and wood than Chicago. The city served as the chief lumber market on Lake Michigan, but its role went much further than just buying and selling wood. Many Chicago lumber dealers participated in every phase of regional lumber production, and Chicago capital thus often directed the movement of white pine from forest to mill to final customer. Quite a few lumber companies in northern Michigan and Wisconsin had at least one partner based in Chicago, and many of the largest regional firms managed all company operations from a head office there.

Sometimes, Chicagoans merely contributed investment capital toward establishing such businesses. This is apparently what happen

1849 when Zebina Eastman, a prominent Chicago journalist, joined two other men in forming a partnership to saw lumber in Ulao, Wisconsin.[42] Eastman limited his involvement with the business mainly to the $1,000 he invested in it. The working relationship among the three men suggests one typical division of labor between Chicago and non-Chicago partners under such circumstances. Partners based in the lumbering districts usually took charge of acquiring wood and milling it, while Chicago partners had responsibility for purchasing supplies and marketing the mill's output. Although the company was known in the city as Z. Eastman and Company, it took the Wisconsin partner's name at the mill itself, where it was known as R. P. Derrickson and Company. Derrickson was more actively involved in the business than either of his two Chicago-based partners, operating the sawmill and devoting his "whole time and energies . . . to the prosecution of the business of the Company. . . ." Although Eastman was mainly a silent partner, the two Chicagoans were in charge of attending "to all necessary business in the City of Chicago, such as purchasing goods, effecting a sale of the company merchandize, and keeping a lumber and wood yard" if circumstances warranted.[43]

Being in charge of "all necessary business in the City of Chicago" could mean a great deal, as the experiences of another Chicago lumberman reveal. The brothers Charles and Nathan Mears, originally of North Billerica, Massachusetts, arrived in Paw Paw, Michigan, in 1836 to run a general store. Charles, a difficult, driven man whose moods swung back and forth between obsessive enterprise and depressed inertia, soon decided to branch out into other lines. He constructed his first sawmill at White Lake, Michigan, in 1837, and sent his first shipment of lumber to Chicago a year later. Although Mears initially thought his best market would be in Milwaukee, and operated a lumberyard there for a few years, by 1848 he had closed the Wisconsin yard and opened a new one at Chicago. It was henceforth the main outlet for his mills.[44] Within another three years, he had taken on two partners who would be in charge of day-to-day operations at the Chicago yard: his brother, Nathan, and the man who had previously managed affairs in Milwaukee, Eli Bates. Over the next quarter century, Mears acquired some forty thousand acres of Michigan pine land, constructed and operated no fewer than fifteen sawmills, and built five separate harbors for the fleet of boats that ferried lumber and supplies back and forth between Chicago and the Michigan shoreline.[45]

Mears was typical of Lake Michigan lumbermen in a number of ways. Although he was a citizen of Michigan and officially resided in the mill town of Lincoln—indeed, he served in the Michigan state senate during the early years of the Civil War and was instrumental in having his town's name changed to honor the Republican president—almost his entire business revolved around the Chicago market.[46] Sales at the Chicago yard determined what sort of lumber Mears cut at his Michigan mills. When he tried in 1852 to save money by sawing thinner lumber, Mears's partners in Chicago soon let him know that the market was punishing them for his error. Eli Bates warned Mears several times that the mills were cutting too much coarse wood with dimensions that were not "plump" enough to satisfy Chicago buyers. "That which has come forward," complained the yard manager, was "*not thick enough,*" and so the yard was losing sales worth tens of thousands of board feet to competitors. As Bates explained, "The only objection to it was '*it is too thin,*' " and did not meet the informal grading standards that buyers were beginning to expect when buying wood in the city.[47]

Because the Chicago markets were critical to business, Mears and other lumbermen regularly relied on the city's newspapers, especially the *Tribune* and more specialized trade publications, to learn what was going on in the markets. "Dont [*sic*] fail," Mears reminded one of his later business partners, "to send me the Tribune by every vessel. . . ."[48] Lumbermen also turned for advice to the monthly market reports issued by large Chicago brokers and commission merchants, who analyzed conditions of supply and demand with an eye to helping their customers saw and ship lumber at the greatest profit.[49] In much the same way, Mears's Chicago office occasionally forwarded to his mill on the other side of the lake special "counterfeit detector" publications to warn the firm's Michigan storekeepers about dubious banknotes that might be circulating in their area.[50] No single location had more information than Chicago about the regional lumber trade, and so dealers and manufacturers from Michigan all the way west to the High Plains looked to the city as they tried to gauge what strategies their businesses should pursue.

Despite his official residence on the eastern shore of the lake, Mears often found himself working as much in Chicago as in Michigan. He employed a resident manager at each of his various mills and thus was able to spend much of every year either in Chicago or on the road. To take just one year as an example, New Year's Day in 1856 found Mears at his mill in Lincoln, Michigan, where he remained for six idle weeks. He did not make his first trip to Chicago until the middle of February.[51] Upon arrival in the city, he made a quick social excursion to Cincinnati and then returned to Chicago, where he stayed until the middle of March. While there, he gathered information about possible pineland acquisitions in Michigan, something which, ironically enough, he could do more easily in the city than he could back home in Michigan. He also bought the government warrants that he would use to purchase the pine lands he had ju identified; ordered mill supplies; and lobbied to get a post office located in one of his towns. All these tasks pertained to his firm's Michigan mills rather than its Chicago yards, but Chicago was still the best place to take care of them.

On March 18, Mears returned to Michigan—not bothering to stop at any of his mills—to visit the state capital and buy the lands he had previously located. Once he had them, he mailed the deeds not to Lincoln but to Chicago. Continuing on from Lansing, he was in Cleveland by the end of March to examine the propeller-driven steamship he had commissioned from an Ohio manufacturer. He devoted the first half of April to traveling around Ohio in search of various pieces of machinery—saws, boilers, and engine parts—for his mills. By April 16, however, he was back in Chicago, where he remained for an entire month to purchase supplies and hire workers. Late May and June found him in Cleveland again, supervising the completion of his new ship and accompanying it to his mill at Duck Lake, where it arrived in early July. Two days after reaching Duck Lake, Mears was back in Chicago, and there he remained for the entire second half of the year. Although 1856 was perhaps unusual in seeing Mears away from his mills for such extended periods, the account of the year still conveys an accurate sense of his activities. Mears and many others who called themselves "Michigan" lumbermen often managed to do much if not most of their Michigan work from the distant southwestern corner of the lake.[52] After Mears finally married in 1874, at the age of sixty, it came as no surprise when he announced to one of his managers that he and his wife would probably "never return to reside" in Michigan. Henceforth, they would consider Chicago their true home.[53]

Michigan lumbermen had many reasons to spend so much time in Chicago. The city's concentration of commodity markets made it ideal for the purchase of every resource other than land (and some heavy machinery) needed to manufacture lumber. The agricultural produce that flooded into Chicago from western farms included many of the basic staples that a logging camp or a mill town needed during its peak months of operation. Among the individual purchases that Mears made in the city during the fall months of 1856 were 75 barrels of salt, 77 kegs of butter, 4 tons of cornmeal, 2,500 bushels of corn, 100 barrels of flour, 13 barrels of beef, 83 barrels of salt pork, 4 tons of fresh pork, 100 bags of oats, and over 50 tons of hay.[54] As Mears's shopping list suggests, Chicago served as pantry, butcher shop, and barn for the entire Lake Michigan lumber district. The city's wholesale markets made it easy to purchase provisions in large quantities, and to do so at prices better than those anywhere else in the region. The flow of supplies from city to mill complemented the flow of lumber from mill to city: ships that might otherwise have returned to Michigan empty could partially fill their holds with whatever items mill town stores needed for their customers.

Chicago was also the ideal place to purchase one other key commodity for lumber production: wage labor. Mears went to Chicago, and sometimes to Milwaukee, to hire many of the workers for his mills. In addition, he scoured the city docks to locate sailors and ship captains to crew the lake vessels he owned. He and other lumbermen counted on Lake Michigan's urban markets to serve as gathering stations for potential employees and to supply reserve labor whenever it was needed. Being able to turn quickly to the cities for workers became especially important to lumbermen at certain key times: when demand for lumber was suddenly greater than expected and mills had to run round the clock, when workers suddenly left or were fired for disciplinary reasons, or when strikes occurred. A strike by twenty of his workers in 1867 prompted Mears to write the Chicago office, "We need good men to fill their places very much." Having heard that workers were "plenty in Chicago," Mears directed, "All our Captains should endeavor to bring over as many good hands as they can. . . ."[55] In just this way, Mears could frustrate his workers' efforts to organize, and thereby keep their wages in line with those of others in the region. The floating populations of laborers concentrated in cities hundreds of miles from the lumber districts gave millowners a crucial measure of control over their local work forces.

Unlike the more seasonal labor arrangements that characterized logging camps, Mears's contracts for mill workers during the late 1850s typically lasted for one year, during which the employee agreed to work at Mears's discretion either in Chicago or at one of the Michigan mills. The typical workday was from sunrise to sunset except when the hours of daylight were under twelve hours; at no time was an individual to work less than eleven hours in a day. Men signing Mears's contracts agreed to bring their own axes, to pay their own passage across the lake, and to abstain from intoxicating liquors. They spent their days hauling logs to the mill, pushing them past the dangerous saw blades, stacking green lumber for drying and shipping, and generally maintaining the whole operation in good repair. In return, they received room, board, laundry, and a wage that, depending on the general economy, ranged from $100 to $200 per year.[56]

Occasionally, a man's wife and children were included in the labor contract he signed. One father, for instance, agreed to have his wife and daughter "work in the house" while he himself did "outside work."[57] In such cases, Mears wrote just one contract to cover the entire family, with no wage for anyone but the father. He made these arrangements only if he could get workers' wives to do the mill's cooking and laundry, at an unstated wage far below their husbands'. When he instructed his partners to hire workers for him in Chicago, he advised them to choose "good men and good Families without Children" to guarantee that women would not waste the firm's time in child-rearing. Mears could sometimes hire a man with a childless wife for the same wage given to a man with no wife at all, and he regarded this as the best possible arrangement, for "family men" were the steadiest and most reliable workers and brought underpaid female labor as a bonus.[58] Whether or not a woman had children, Mears was adamant that she contribute to the work of the mill. "I am sure," he told one of his managers, "my Business will not warrant the payment of wages sufficient for any one to keep his wife as a Laidy [*sic*]."[59]

Like the prices of all other commodities, the wages workers were getting on the streets of Chicago and other lake cities drew Mears's close attention. Because his contracts obligated him to keep workers for an entire year, he became anxious whenever the prevailing price of labor dropped below what he was paying. This was particularly true during the panic of 1857. Having hired his men with contracts guaranteeing them $180 or more for a year's work, Mears grew nervous as he watched wage rates in Chicago drop below $10 per month—a third less than what he was paying. He therefore urged his managers to pay off any men who were willing to leave early, so that he could hire new ones at the lower Chicago rates. "I can now," he wrote one manager, "hire a plenty of good hands at from 8 to $10 per month by the year and would be glad to pay off all who are willing to give up their contracts & leave & hire others at the going wages. . . ."[60] Mears kept track of wages in several cities, but his standard comparison was almost always with Chicago. The city served as his leading indicator of the cost of labor and, as such, helped set regional wage rates for Mears and others like him throughout the lumber districts.[61]

Cash flow was a perennial problem for Mears and most other lumbermen. When economic conditions turned bad, how and when to pay wages became the biggest single source of conflict between a firm and its workers. Although men and their families often earned board and laundry as part of their contract with Mears—so some of their wages came as continuous payments in kind—they were much less certain about when they would receive their cash wages. Money, a firm's most liquid form of capital, became its most critical resource when lumber was hard to sell. Whenever the market turned against him, as it often did during the winter and always during financial panics, Mears tried to avoid paying actual cash to his workers until the last possible moment. During the 1857 panic, when the firm had few liquid assets, Mears offered store credit to workers who were willing to take it—but no money. Their angry reaction was hardly

surprising. As Christmas approached, one mill manager reported, "There has been great dissatisfaction about my not giving them cash. . . ." To let Mears know how angry men were becoming, the manager reported that he feared for his own safety: "I have been told . . . ," he said, "how I should be served" if wages did not appear by Christmas. The holiday ball was coming up soon, he told Mears, adding, "I hope you will be here to supply them with the money."[62]

It proved a vain hope. Those not satisfied with Mears's offer of store credit during the panic had only one recourse: quitting and demanding back wages. Unfortunately for them, Mears had no money and was not prepared even then to make good on their contracts. Instead, he offered them not the liquid capital of cash but the nonliquid capital of nature itself: the raw materials that in better times constituted his chief source of profits. The best he could do while hard times continued, he told one manager, was to offer departing workers payment in kind: "Those who leave I think might as well take most of their pay in good[s] & supplies which would be quite as good for them as money, & go in to some Business for themselves for the winter, as they will without doubt find it most impossible to get work elsewhere." The irony of an entrepreneur's giving up his capital at just the moment it no longer promised him any profits could hardly have been lost on his workers. One can imagine their reaction to Mears's closing gesture of magnanimity: "You may give them," he wrote, "the priviledge [*sic*] of chopping wood on my land below the Middle House & have the wood. . . . I am willing they shall have all they can make till Spring. . . ."[63] How they would sell such wood when Mears himself was unable to do so was a question he did not try to answer.

Harsh as Mears's actions may seem, he had good reason for them: under the depressed economic conditions of 1857, his own business was no longer profitable. Markets in Chicago and elsewhere had collapsed, and the backward flow of money that ordinarily paid for shipments of lumber had dwindled to nothing. "We are now," he wrote, "having the hardest times with the most *Gloomy* prospects for Business in Future that this Country has ever seen."[64] In such circumstances, it hardly mattered to Mears that he had signed contracts requiring him to pay workers no matter what the price of lumber. Even if he had possessed funds enough to meet his obligations, he would have been unwilling to spend good money on labor that had no prospect of earning back its own cost. "They certainly cannot expect me," he observed about his workers' requests for money, "to pay them more wages than can be realized from their labour." To Mears, it seemed that the men should be grateful just to have jobs, even if they did not receive cash for their work. "I supposed considering the condition of affairs in the Country," he fumed, "that all hands would be obliged to me for giving them imploy at such wages as I could afford to pay & be willing to take part of their wages in trade at that."[65] If the men could not see that their true interest was to have any job at all under such circumstances, so much the worse for them.

Mears's occasional inability to meet his payroll points to a deeper problem that he shared with other Great Lakes lumbermen in the era immediately surrounding the Civil War. Like many frontier entrepreneurs, most lumbermen were undercapitalized.[66] Despite the high book value of a typical lumber company's *fixed* capital—the lands, mills, and machinery that easily ran to hundreds of thousands of dollars for even a medium-sized firm—many companies often lacked the *liquid* capital needed to turn trees into lumber and lumber into cash. Even if a lumberman owned ten thousand acres of prime timber and a state-of-the-art sawmill, neither was any good without the money to hire workers or buy supplies. Lack of capital was undoubtedly the industry's single most persistent and prolific source of sleepless nights and ulcers.

Shortages of liquid capital made the many financial risks confronting lumber operators all the more severe. Some of these risks lay in the very wood that composed their fixed capital. Sawmills were notoriously vulnerable to fires that could destroy them in a single night. In 1858, for instance, Charles Mears's manager at Duck Lake sent him the laconic message "Last night we retired to bed at 9 o'clock, at 10 o'clock we was all aroused—the Mills are entirely ruined."[67] In this and other cases, the conflagration had been set by an aggrieved worker who found in fire a ready weapon against his employer.[68] Whether a fire occurred by accident or by intent, the same thing could easily happen to the stacked wood in lumberyards, and even to whole forests. The annual fire reports of Chicago's chief lumber journal always ran to dozens of entries.[69]

Water too posed risks. Ships on Lake Michigan had an unnerving tendency to sink or run aground during storms, a danger that grew as lumbermen tried to get in a last shipment before the cold of winter finally sealed the harbors.[70] Once winter had set in, too much or too little snow could mean trouble for loggers in the woods, just as springtime floods or droughts could wreak havoc with the river drives. Perennial as these risks may have been, given the very nature of the lumber trade, they always served as grim reminders of just how close to the edge a firm was operating. Although lumbermen might try to insure against them, even a single such disaster could mean bankruptcy for a company whose capital was too meager to absorb the blow.

But the greatest risks of the lumber trade flowed less from its occasional disasters than from the ordinary cycling of its natural year, which created long periods when a company had to pay out far more money

than it earned. Throughout the fall and winter months, firms had to spend thousands of dollars on food, supplies, and wages, even though they could ship no lumber to market as long as Lake Michigan and the port cities were locked in ice. Because they depended in opposite ways on the freezing and thawing of water, the natural rhythms of supply and demand seldom moved in harmony: the most expensive time of the year came exactly when it was least possible to earn income. Success in the lumber industry required enough capital to meet costs during the long winters when shipping and sales fell to a minimum. Some operators found themselves short of money every winter, while others, like Mears, generally had enough funds to do all right except during financial panics. Sooner or later, however, almost everyone faced cash shortages that threatened business.[71]

When this happened, lumbermen could resort to several tactics that might mean the difference between bankruptcy and survival. One was to follow Mears's example during the 1857 panic: pay out as little cash as possible. This could be accomplished by such cost-cutting measures as not buying supplies, reducing production, refusing to pay old debts, making payments in kind, or firing workers. When the Holt Lumber Company faced hard times in 1877, its Chicago office directed its mill in Oconto, Wisconsin, to adopt almost all of these measures. "In regard to paying the men," directed the Chicago partner,

> I agree with you that it is better to pay what we can from the store, if we can do it to any advantage, but I have no idea of putting in a large stock of goods there and getting in debt for them and trusting them out. . . . I want every man discharged that can possibly be spared [a]bout the Mill[,] Store & everywhere else. Our expenses [no]w are eating us up, and must be curtailed.[72]

All such measures were ways of tightening the account books to cut away as many financial obligations as possible. At the same time that lumbermen were reducing costs in these ways, some scrounged to find any alternative source of income they could. Mears, for instance, went so far as to urge his mill managers to gather and sell blueberries, blackberries, peaches, and furs.[73]

An equally important survival tactic was to concentrate a firm's cash reserves wherever they were most needed. In practice, this meant regularly shifting money among a firm's logging operations, lakeshore mills, and Chicago yards—assuming its business included all these activities. Mears, who was more conservative about credit than many, regularly dealt with cash-flow problems by ordering his managers, "Send us ev dollar you can spare. . . ."[74] The Chicago partner of the Holt Company responded to its capital crisis in 1877 by writing his Wisconsin mill, "I will send you what money I can," but telling his partners, "You will have to pay out money as sparingly as possible. We have a large amt of paper falling due the 1st of the month and we are getting in almost nothing to meet it."[75] Such movements of capital occurred during calmer times as well. For example, Mears's brother, Nathan, informed him in October 1852 that the Chicago yard had "plenty fund on hand if you want to the amount of six to ten thousand dollars."[76] In this way, sales at Chicago yards helped keep Michigan and Wisconsin mills operating when money was short, while store income from the mills helped on a smaller scale to pay for supplies in Chicago. Any lumber company that ran logging operations, a Lake Michigan mill, and a Chicago yard was by definition an interstate business with resources widely distributed across the region.[77] It thereby gained the ability to transfer its funds from mill to yard and back again—from forest to city to prairie, and from cornfield back to pinery—to meet the needs of trade. Just as lumber and supplies shuttled between Chicago and the lumber towns, so did money and capital.

But something else moved in this way as well: credit. When firms found themselves, as they regularly did each winter, having to spend money they did not possess, the most attractive solution was to spend money belonging to someone else. If one could acquire goods without paying for them, or get workers to cut trees and saw lumber without giving them cash, one could survive the seasonal downturn until sales of lumber brought in the funds to pay off accumulated debts. If a firm had too little cash to conduct business entirely with its own capital, it could purchase supplies on credit. It thereby transferred the burden of its own capitalization to a third party, more often than not a merchant or banker located in a major city like Chicago. By relying on Chicago wholesalers to advance them funds, small or undercapitalized Michigan and Wisconsin firms could survive the winter months when demand was at its worst. Come spring, they could then hope that the flow of natural capital from the forests would meet the demand of the farmers, turning lumber into cash and enabling companies to pay off their debts.

As the experiences of Charles Mears show, the dangers of the seasonal cycle were compounded by the business cycle. The same shortage of liquid capital that led lumbermen to fear the winter months threatened catastrophe when the economy jolted into a financial panic. In years like 1857, 1873, and their lesser cousins, many lumber companies found themselves caught in a trap of their own making. Not only had they incurred debts with their suppliers, but more often than not they had also extended credit to their own customers, who were now unable to pay. Under such circumstances, the long chain of debts and credits broke at its

weakest links, and firms had to scramble to avoid becoming one more victim in the ensuing series of defaults. Declaring in October 1859 that "these are the hardest times for the lumber trade I have ever seen," Mears wrote one of his managers, "I . . . have hardly been able to attend to any thing but money matters and have hardly been able to collect enough to pay expenses." After repeating his ritual injunction "I hope you will not fail to send me all the money you can spare," Mears added, "Many of the lumber Dealers will be obliged to fail if these times last a month longer."[78] Such were the perils of juggling debts in the troughs of the business cycle.

Risky as the dependence on credit could be, there was almost no way to escape it. Buyers and sellers were both short of cash, which meant that both had to offer customers their best natural alternative—lumber, grain, meat, and other provisions—in return for a promise to pay cash in the future. During ordinary years when the economy was healthy, one could do a reasonable business in this way; during panics, one had to hope that creditors would be patient while one waited for one's own customers to pay for goods they had bought on time. Although the obvious way to escape such risks was to avoid selling (or buying) on credit—Mears repeatedly reminded his managers, "I do not wish to extend a dollars credit to any man"—this was much more easily said than done.[79] As one lumber merchant explained in a letter to the *Northwestern Lumberman,*

> You can not do it! Why? Because credit is not an extraneous substance which exists on the outside of the business; it is not a wash upon the surface; it is a part of the innermost. If it is a disease, it lies next to the most vital parts. To suddenly remove it would be to endanger life.[80]

The greatest threats to a lumber firm's economic well-being were thus, ironically, also the fount of its prosperity. The mills whose cheap wooden construction made them affordable also made them susceptible to fire. The late-season shipments of lumber that reached Chicago in time to take advantage of the city's winter market also faced the threat of shipwreck in December storms. And the credit that allowed companies to do a larger business than their capital justified also laid them open to financial disaster in a panic. The risks of the lumber trade were indeed a disease lying "next to the most vital parts." A lumberman's greatest challenge was to prevent that chronic condition from becoming fatal.

Cargo Market

It was for this very reason that Chicago emerged during the 1850s the single greatest lumber market in the world. The solutions to se and business cycles alike came to center on the city in such a way that Lake Michigan lumbermen had little choice but to turn to Chicago as their safest port in good economic weather and bad. The natural capital they held in their trees, logs, and lumber became valuable for trade only if they could turn it into the liquid capital of cash and credit. To work that transformation, they needed a dependable market—and no western market was more dependable than Chicago. In the city's marketplace, the commodities of the forest underwent their crucial conversion into money, and so provided the basis for another cycle of production: lumber became cash, and cash became the wages and provisions that would sustain the next round of logging and milling. In this cycle of cash and capital lay the source of Chicago's influence over the supply side of the market.

The conversion of wood into money could happen in at least two ways. Mill operators like Mears who owned Chicago yards could simply have their ships pick up lumber in Michigan or Wisconsin and deliver it directly to their docks in the city, taking upon themselves the different roles of manufacturer, shipper, wholesaler, and sometimes even retailer. Many sawmill operators, however, did not possess the resources to handle all these roles at once, and thus could not afford to maintain their own Chicago yard. Unlike Mears and other large operators, they had to adopt a second strategy. After loading their output into the hold of a Lake Michigan ship that they might or might not own themselves, they then consigned it to Chicago in the hope that some purchaser—usually a commission merchant or an independent wholesale dealer—would buy the lumber after it arrived in the city. This was a riskier way to do business, but if one lacked the capital to handle sales directly, there were few alternatives.

From the 1850s forward, independent lumber ships arriving in Chicago generally made their way up the Chicago River to the foot of Franklin Street, just before the river split into its north and south branches. There, on a few hundred feet of wharves collectively known as the wholesale docks, the buyers and sellers of Chicago lumber met in the "cargo market"—probably the only place in the United States where traders conducted a wholesale market in unsold shiploads of lumber throughout the warm months of the year. Not even such major lumber centers as New York, Albany, Boston, or Philadelphia had a comparable institution.[81] "Chicago," wrote the *Northwestern Lumberman* in 1878, "is about the only point in the country where there is a 'market' for lumber, as between manufacturers and wholesale dealers."[82] Each morning, starting sometime after sunrise and continuing until about noon, the city's commission merchants and wholesale dealers "went on the market" by boarding the ships to inspect whatever wood they could see below deck. On the basis of

the volume and quality of the cargo, they offered a price for the entire shipload of lumber. Once buyer and seller had completed their transaction, the ship was towed to the purchaser's yard in the lumber district proper, along the banks of the South Branch. There, its new owner unloaded it and prepared it for wholesale or retail sale.[83]

Several features of the Chicago cargo market made it unique on Lake Michigan, if not in the entire country. These features almost guaranteed the city's dominance in the lumber trade once large numbers of independent ships began to use the wholesale docks in the 1850s. One was simply its reliability. So great was the demand concentrated in Chicago by the city's railroad lines that its lumberyards had an almost insatiable appetite for whatever the ships could bring them. "No lumber market but this," remarked a Chicago correspondent of the Milwaukee-based *Wisconsin Lumberman* in 1874, "could dispose of an average of three million feet per day . . . for the space of nearly seven months each year."[84] Lumbermen could be confident that Chicago would always have someone ready to buy their wood, no matter how large the shipment. The fierce competition at the docks kept prices lower than they might be elsewhere, but that mattered less than knowing one could always make a sale. Much like railroad managers, lumbermen had to worry about buying supplies, paying debts, and meeting fixed capital costs, and so they often cared more about earning a reliable income quickly than about getting the highest possible price for their product.

To see why Lake Michigan mill operators chose to send the bulk of their output to Chicago, one has only to consider their alternatives. The city's nearest competitor on the western shore of the lake was Milwaukee, but its much smaller railroad network gave it an equally small wholesale hinterland for lumber. Even in the 1870s, it maintained stocks of lumber that were less than a seventh of Chicago's total.[85] Most wood went to Milwaukee only if a dealer had already purchased it in advance. Lumbermen knew from hard experience that buyers were "not particularly numerous" in Milwaukee, making it difficult to sell lumber at the city's docks. "Sometimes," wrote one observer, "after fruitless lingering on the meager market, a lumber vessel is forced to pull out for Chicago, the caresses of sharp-clawed friends being preferable to a supreme cold shoulder."[86] The bottom line was simple: Chicago was the only place on Lake Michigan where one never had to wait long to sell lumber. Its prices might be low, but at least its merchants were always willing to strike some sort of deal.

Two other features of the cargo market made it even more attractive to Lake Michigan lumbermen: Chicago dealers bought lumber by the shipload *and* they paid hard cash for it. Nowhere else was this true. As the

Wisconsin Lumberman reported to its readers in 1874, "Chicago is not only the largest lumber market in the world, but it has always had an eminent reputation as a market upon which almost any amount of lumber could be placed at any time and sold for cash."[87] For lumber vessels whose owners and captains were eager to return to the mills as soon as possible for another shipment, there were enormous advantages in being able to sell large quantities quickly. A rapid sale meant reducing the amount of time a ship sat idle (and paying dock charges) in port. It lowered the transaction costs that came with each additional buyer. It avoided the need to unload lumber onto the docks so that potential purchasers could inspect it piece-meal. And it eliminated the very real possibility that at the end of several sales low-quality lumber might remain that no one would buy at any price. Being able in one transaction to sell everything a ship contained allowed lumbermen from Chicago's hinterland to shift these costs and risks onto the shoulders of the city's merchants. Even more important, though, buyers at Chicago's cargo market always paid cash. For mill operators perennially short of money, the prospect of converting lumber instantly from natural capital into liquid capital justified adding many extra miles to its journey. "Lumber," explained one Chicago dealer, "comes here because it can be sold for cash."[88]

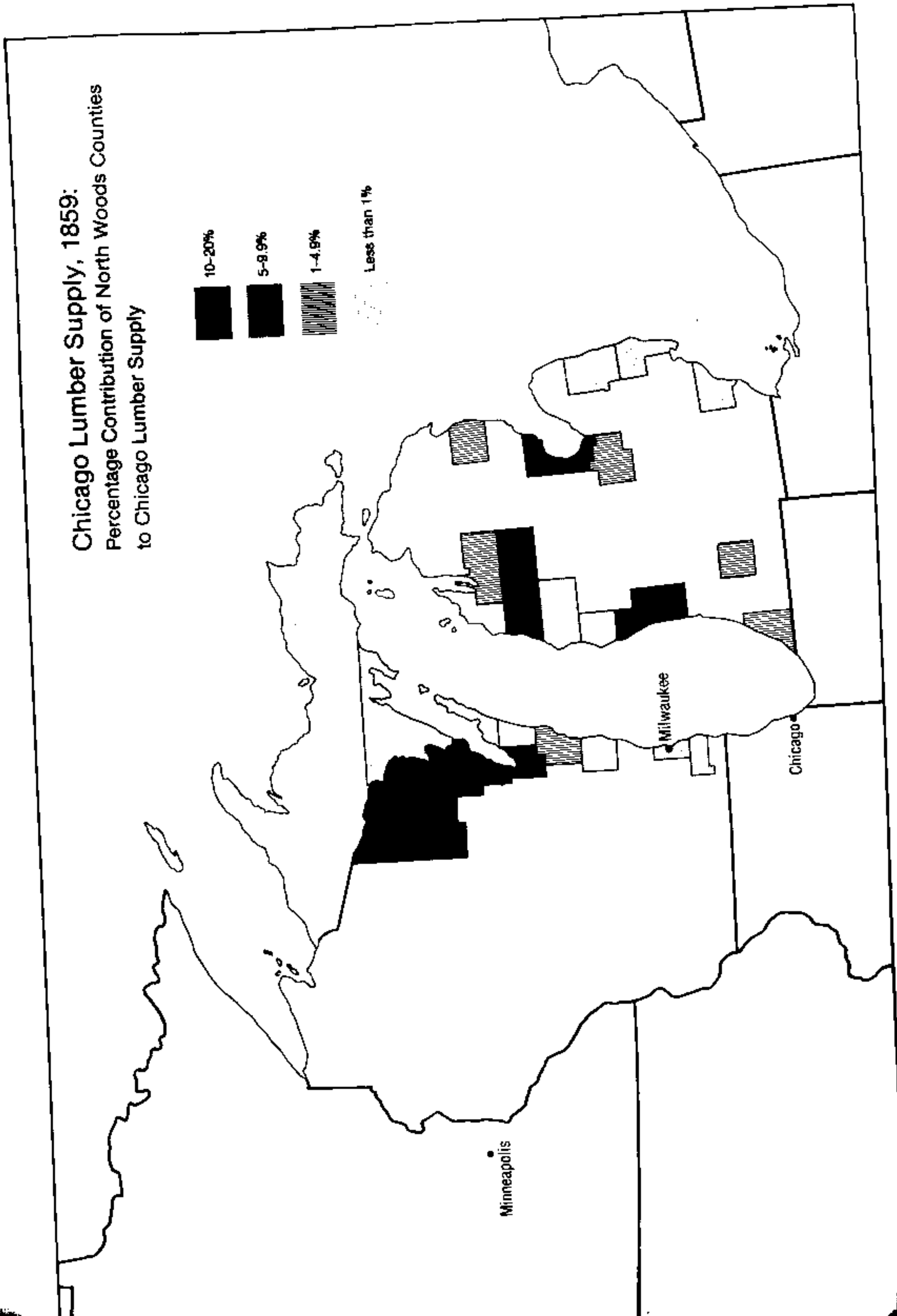
As soon as the ice broke up in the spring, lumberman around the lake sent off shipments to raise the cash with which to repay their winter debts. As they did so, they made a simple calculation about where to send their output. If they shipped lumber to lake towns other than Chicago, they would in all likelihood have to sell to customers who had to buy on credit—which was of no help in meeting their own financial obligations. No such problem existed in Chicago. Furthermore, Chicago's other wholesale markets sold food and provisions in bulk at some of the lowest prices in the region, so lumber ships could bring back supplies rather than return to their home ports empty. All arguments pointed to Chicago as the best destination for most lumber shipments. As a result, lumber vessels accounted for most of the ships that visited Chicago's harbor: of the nearly thirteen thousand arrivals there in 1872, over nine thousand carried lumber.[89] One visitor to Chicago recorded that on a single day in 1867, "a favorable wind blew into port two hundred and eighteen vessels loaded with timber."[90] The *Northwestern Lumberman* was not exaggerating in 1879 when it remarked, "It may almost be said that the few hundred feet of dock at the head of Franklin street is the center around which the vast industry represented in the handling of lumber revolves."[91]

Lumber arriving at the cargo market came from all around the shores of Lake Michigan; some even came from as far away as the Canadian and Michigan ports on Lake Huron. In 1859, Chicago's two most important

trading partners were Muskegon, Michigan, and Green Bay, Wisconsin, both at the mouths of river systems that drained extensive areas in the interior of their respective states. Important as they were, Muskegon accounted for only 18 percent of Chicago's total lumber supply and Green Bay for 14 percent.[92] Only one other port—Oconto, Wisconsin, north of Green Bay—contributed more than 10 percent of Chicago's supply, a fact that suggests the extent and diversity of the city's lumber hinterland. The rest of Chicago's wood came from dozens of small sawmill towns scattered up and down the lakeshore. Although Lake Michigan lumber operators depended heavily on Chicago wholesalers to buy their wood, the converse was not nearly so true of the wholesalers. Chicagoans were in the happy position of being able to buy from as many sellers as they wanted. Competition to sell was fierce, which meant that wholesalers could accumulate large stocks at very favorable prices. They could afford to have sharp claws.

But Chicago's central role in the lumber trade had still other sources that were at least as important as the cargo market's ability to attract many sellers from a wide area. The attractiveness of the Franklin Street docks as a cash market was attributable to the wealth and organization that allowed the city's wholesale yards to sustain an open market in lumber. For the three decades following 1850, Chicago wholesalers were the largest and most important lumber operators between the Appalachians and the Sierra Nevada. It was their capital, made available either as cash purchases or credit advances, that permitted so many small sawmills and logging operations to do business with what would otherwise have been insufficient financing. By 1880, the city's lumber merchants jointly controlled an estimated capital of over $80 million, a sum several times larger than the aggregate capital held by all the city's banks.[93]

The wholesalers amassed this enormous fortune by acting as intermediaries between the original suppliers of lumber in the Lake Michigan forests and the ultimate consumers of it in the small towns and farming areas of the prairies. As go-betweens, they performed several crucial functions for manufacturers and retail customers alike. The most important was simply to smooth out the seasonal oscillations of supply and demand by holding vast quantities of lumber. One could order even the largest shipment of lumber from Chicago no matter what the time of year. The stock in the city's yards far surpassed that in any other western city, so much so that at the beginning of 1879, for instance, Chicago yards were holding over 400 million board feet of lumber. By the best contemporary estimates, this amounted to over one-fifth of the milled lumber waiting to be sold at urban yards in the entire region streching from Cleveland to Minneapolis.[94] So concentrated a supply meant that, ju



as millowners could always find someone in the Chicago cargo market who would buy their lumber, so could retail dealers and customers always find someone in the Chicago lumber district who would sell it to them. Because the wholesale market was highly competitive, its prices were attractively low, and that often enabled Chicago firms to outsell lumber dealers located hundreds of miles away.

For anyone who visited it in the years following the Civil War, the lumber district was an astonishing place, almost a city within a city. As one passed the Franklin Street wholesale docks and rounded the bend to float onto the South Branch of the Chicago River, one entered a world that appeared to consist almost entirely of stacked wood. As a stunned British visitor remarked, "The timber yards are a considerable part of the city's surface, there appearing to be enough boards and planks piled up to supply a half-dozen States."[95] Especially on the west bank of the river, whole city blocks might contain nothing but docks and seemingly endless heaps of pine lumber ten or more feet high. All told, the district contained twelve miles of dockage devoted solely to handling lumber ships.[96] The smell of sap and sawdust hung in the air, mingled with the less pleasant odors of sewage from the river. Here and there above the square woodpiles, one could glimpse the masts of docked ships as they unloaded the lumber in their holds, as well as the looming shapes and smoking stacks of nearby grain elevators. Otherwise, though, the vista stretching off into the gray middle distance was raw lumber and nothing else. The woodpiles dwarfed the offices of individual lumber merchants, which were barely distinguishable from their surroundings. After dark, it was a lonely and abandoned landscape, the gloom broken only by the wandering lanterns of night watchmen making their rounds to guard against fire and theft.[97]

The heart of the district lay along the mile of riverfront south of Twenty-second Street and west of Halsted. There, more than a dozen short canals, each over a quarter mile long, fingered north from the river. Along these canals were hundreds of standard lots measuring 244 by 100 feet. Each one had 100 feet of canal frontage, and at the back of each was a railroad siding connecting the yard via the Chicago, Burlington and Quincy with every railroad line in the city. Once a wholesale dealer had purchased a shipload of lumber at the cargo market the entire vessel floated down the river to a dock at one of these yards. A crew of "lumber-shovers" then unloaded and stacked the lumber onto the dealer's lot. There, the boards sat until some retail dealer purchased them for shipment to another city, whereupon they had only to be moved no more than a couple of hundred feet to the railroad car that carried them to their final destination.[98]

More went on in these yards than the simple receiving, stacking, and shipping of wood. Because of the sawmill operators' urgent financial need to sell their lumber as quickly as possible, most of it arrived in Chicago still green with moisture and sap. The wholesale yards therefore contributed to the final stage of lumber manufacture by drying wood that was still too damp for safe use. In effect, this was yet another capital cost they absorbed for the sawmills, since money invested in lumber did not earn any income while wood sat drying in the yard.[99] One reason wholesalers kept so many woodpiles in the lumber district was to give themselves enough of an overstock that they could fill any orders that came in while newly arrived shipments were still drying. But just how seriously they took this part of their job is open to question. Given the high demand even for green lumber in Chicago's hinterland markets, and given that wholesalers viewed stacked wood as capital that was not earning its keep, they had strong incentives to declare lumber ready for sale even when it still felt damp to the touch. Chicago dealers shipped wood that was much greener than many of their country customers liked, with consequences that have been evident in the warped walls and floors of many a farmhouse ever since.[100]

Chicago wholesalers may not have taken very seriously the task of drying wood, but they were much more serious about another of their chief activities: sorting wood. Because the sawmills hurried their product to market by the shipload, they made little effort to separate good wood from bad. Instead, they sent literally everything that was remotely marketable. A typical shipment might contain pieces of lumber that differed widely in dimension, dryness, knottiness, sappiness, degree of finish, and overall quality. This meant that when wholesalers at the cargo market bought everything in a ship's hold, they inevitably purchased different pieces of lumber that would bring widely varying prices from retail customers. To obtain full value from their purchase, therefore, they had to sort the wood into categories that customers would recognize.

After unloading wood at the yards, lumber workers graded it according to informal rules that superficially resembled those used for grain at the Chicago Board of Trade. How many knots did the wood have, and how large were they? How wide and long was it? Did it have sap stains? Was it warped? And so on. Once graded and inspected according to these rules, lumber was sorted into the appropriate part of the yard, so the physical layout of the lot came to reflect the yard's grading scheme. With the completion of this step, the timber that had arrived at the cargo market as a raw, homogeneous mass was carefully differentiated into the conventional categories of the marketplace. What had begun as a natural pine tree had been progressively transformed from log to board to artificially standardized commodity. The Chicago wholesale yards were thus a long way—in thought as much as in space—from the forests that had been cut down to supply them.

When customers, most of whom were dealers located in hinterland towns, placed an order with one of the Chicago yards, the prices they paid depended on the grade of wood they selected. Lumber, shingles, and lath each had separate standards that identified them as "clear," "first common," "second common," and so on. The broadest distinction in grades was between "clear" stock, which tended to be sold at higher prices for use in finishing, and "common" stock, which was cheaper and of lower quality. The best clear lumber—broad boards entirely free of knots or sap stains—often went to merchants in towns and cities where wealthier residents were willing to spend good money to give their homes a fine appearance. "Common" lumber sold more widely, since it was used by everyone to frame buildings and was also popular with poorer customers, many of them in rural areas, who could not afford to worry about the finish of their houses.[101]

In effect, the enormous concentration of supply in Chicago's lumberyards encouraged its dealers to attempt the same abstraction of a natural resource that had occurred in the city's grain market. As in the grain trade, in the lumber trade buying by rail often meant that hinterland customers had to wire their orders to Chicago without seeing in advance the products they were buying. Doing this was possible only with some sort of grading scheme. Chicago wholesalers reached a rough agreement about how the city's lumber should be graded, and because they so dominated the western market, their grading system, like that of the Board of Trade, proliferated across the region to become the basis for sales in hinterland towns.[102] Competing lumber districts adopted it as well: sawmills on the Chippewa River in northwestern Wisconsin hired Chicago lumber inspectors to make sure that their output conformed to Chicago grades.[103] Remembering the feverish speculative market that emerged after the Board of Trade standardized grain grades, a few Chicago merchants even hoped that the city's lumber market might develop along similar lines. Where standard grades existed, could futures contracts be far behind? If so, surely the profits from a full-scale futures market in lumber would make the city's existing trade look like small kindling.

But the story of Chicago's lumber trade would have a much different ending: no speculative market in wood ever really developed there during the nineteenth century.[104] The city's lumber grades never became so standardized as its grain grades, probably because buyers of wood continued to insist on differentiating its qualities much more carefully than those of grain. Once one built something from wood, one had to live it for a long time. For those who marketed it, lumber was bulky, expensive to store, and easy to damage. It had none of the liquid qualities that had allowed grain elevators to transform the handling of wheat and corn. These characteristics all made if difficult to treat lumber quite so abstractly as grain, and thus made it less suited to the speculative needs of a futures market.[105] Moreover, the Lumberman's Exchange of Chicago, the city's chief organization of lumber wholesalers and manufacturers after its founding in 1869, never attained anything like the power or prominence of the Chicago Board of Trade.[106] Although Chicago lumbermen during the 1870s and 1880s regularly sought to promote national lumber-grading standards that resembled their system, none of their efforts succeeded.[107] Regional grading schemes with effective enforcement did not appear in the lumber industry until the 1890s, and they were based on Mississippi Valley standards, not Chicago ones.[108]

Although Chicago's grades for lumber quality did not become wholly standardized across the region, the sizes in which city dealers sold their wood did set informal but widely recognized standards. The customers who purchased the bulk of Chicago's lumber sought it in certain regular dimensions, among which the humble two-by-four was just one of several popular choices. The huge and growing market for such essential wooden objects as fence posts and railroad ties demanded that logs be cut according to rigidly consistent scales. The same was true of the wooden structures that rural farmers and townspeople were building for themselves. Obtaining the designs of their houses, farms, and commercial buildings from popular pattern books and builders' manuals, people were eager to buy wood that came as close as possible to the specifications in those books. A good sawmill could supply pieces of wood with almost identical width and depth measurements, so carpenters had only to cut them to proper length—thus significantly reducing the labor involved in construction. For all these reasons, lumber of standard dimensions became more and more popular with American builders during the course of the nineteenth century.

Here again they followed Chicago's example. In 1833, just as the city was experiencing its first major real estate boom in the wake of the canal fever, the builder Augustine D. Taylor devised a new architectural framing system while constructing St. Mary's Catholic Church.[109] In designing the building, Taylor rejected the strong but laborious timber-frame construction—with heavy beams held together by hand-carved mortise-and-tenon joints—that had typified wooden architecture since the European Middle Ages. Instead, he turned to the new, lighter, mass-produced pieces of lumber that were beginning to be available in the city, and combined them with an even more unpretentious product of America's

machine age: the nail. Taylor used these simple materials to erect a structural skeleton consisting of sills, floor joists, studs, and roof rafters, all nailed together and covered with a wooden sheathing of clapboards and shingles. Because his design supported the load of the building with a cage-like framework consisting of many lightweight studs and joists rather than a few massive wooden columns and girders, it came to be known as the balloon frame.

As a popular farmer's manual defined it in the 1880s, what distinguished the balloon frame from its more stolid predecessor was that it consisted of "a strong frame made with few mortises and tenons, spikes and nails holding all firmly together."[110] Mundane as this simple description may sound, it proclaimed an architectural revolution. Because the balloon frame consisted of light, milled wood, a small number of workers could erect it quickly; because it was held together with nails instead of intricate carved joints, it required less skill than earlier buildings; and because its components were easy to modify and repeat, it was wonderfully adaptable to buildings of different shapes and forms. Perhaps its only real drawback was that the tall two-by-four studs supporting both the second-floor joists and the roof rafters formed continuous air spaces that ran from basement to roof. Because builders did not at first grasp the implications of these air spaces, early balloon-frame structures had few or no fire-stops in their walls.[111] In the event that any part of the structure started to burn, the walls quickly began to act as flues, and the building became an inferno. Chicagoans would learn this lesson all too well during the Great Fire, which devastated their city in October 1871.[112]

Despite this one invisible danger of the balloon frame, Chicagoans and other nineteenth-century Americans had every reason to embrace it as the quintessential building form of the age. In a world where wood was cheap and readily available, Taylor's design was ideally suited to the task of occupying a frontier landscape as quickly and with as little labor as possible. "Everything new," wrote a traveler to Chicago in 1880, "is of wood. . . ."[113] The balloon frame was no less well adapted to the needs of humble farm outbuildings than to the elaborate architectural fantasies it soon helped inspire in the domestic residences of the well-to-do. Even inexperienced carpenters could use it with reasonable success, and builders' manuals promoted it accordingly. By the second half of the nineteenth century, the vast majority of America's wooden buildings were using it.

Appropriately enough, the decades following 1850, during which the balloon frame triumphed in American architecture, also constituted the period when Chicago emerged as the greatest lumber market in the world. The fences, railroad ties, and buildings that fueled the prodigious

American demand for wood were in common use throughout the country, but nowhere was the demand for them more concentrated than at Chicago. In no other city on the planet was there a neighborhood to compare with the vast, strange landscape of stacked wood that dominated the South Branch of the Chicago River. In no other city did so large a lumber fleet gather to deliver so immense an output from so many different sawmills. And in no other city did so many customers from so extensive an area gather to buy so much wood.

Buying by Rail

If the lumbermen of Lake Michigan had good reasons for selling their product in Chicago, the settlers and retail lumber dealers of the western grasslands had equally good reasons for buying it there. The most obvious was the familiar ecological one: for the first time in the history of North American frontier settlement, would-be farmers and town builders had moved out of the forest and into a grassland ecosystem where they had to rely on sources of wood lying far outside their immediate locales. "The prairies," wrote one traveler, "to which Nature has been so variously bountiful, do lack this first necessity of the settler, and it is Chicago that sends up the lake for it and supplies it to the prairies."[114] The same attractions that had pulled sellers to the Chicago marketplace drew buyers there as well: the sheer volume of wood its dealers could handle, the variety of assortments they stocked, and their readiness to offer cash to sellers and credit to buyers. In Chicago, lumber supply met lumber demand on an unprecedented scale.

But the mere conjunction of forest and prairie could not by itself have produced Chicago's extraordinary wholesale market in lumber. The geography of capital was no less crucial than the geography of nature in bringing so many sellers and buyers together, for both depended finally on the iron and steel rails that were Chicago's gateway to the western prairies. Because the city by 1860 was already the central rail depot of the upper Mississippi Valley, Chicago's wholesale lumberyards became the chief suppliers to inhabitants in a broad fan-shaped swath of land reaching to the Great Plains and beyond. Farmers and townspeople in Illinois, Iowa, and southern Wisconsin were among the chief customers of Chicago's lumber dealers, but the city's reach extended much father west, to wherever the rails ran. For many grassland customers, the rail network made Chicago the best option for obtaining lumber. The superintendant of the Chicago, Burlington and Quincy could thus write in 1868 of the lumber dealers at St. Joseph and Kansas City, "They get from Chicago their lumber because they cannot ge[t] it any other way."[115] By the end of the 1860s, Nebraskans and Kansans were buying much of their lumber from Chicago, and the city's wood was framing buildings as far away as Colorado and Wyoming.

Sometimes entire buildings rode the rails west from the city. One Chicago firm, as an 1867 visitor described it, went so far as "to despatch timber in the form of ready-made houses" to customers throughout the Great West, its proprietors being "happy to furnish cottages, villas, school-houses, stores, taverns, churches, court-houses, or towns, wholesale and retail, and to forward them, securely packed, to any part of the country."[116] Chicago firms that manufactured building components—doors, sashes, and blinds—shipped goods even greater distances, and not just to the West. By 1880, an eastern tourist could report that he saw railroad cars at one Chicago factory that were destined "not only for Denver, Leadville, Santa Fe, and Salt Lake City, but—tell it not in New England—for Connecticut as well."[117] Wherever the city's lumber went, and in whatever form, it reached its destination by rail.

Just as they did with grain, the railroads had powerful reasons of their own for making Chicago central to the lumber trade. One was simply the sheer volume of business it generated for them. By 1860, the city's yards were annually shipping over 220 million board feet of lumber.[118] Nearly 80 percent of it rode the rails. By 1870, the city's lumber shipments had risen to over 580 million board feet, and by 1880, to over a *billion* board feet—of which the railroads' share had grown to 95 percent. For individual lines passing through treeless country, these aggregate numbers meant big business. In 1870, for instance, the Illinois Central, the Chicago, Burlington and Quincy, and the Chicago and Alton each carried over 120 million board feet of lumber. Only the city's grain shipments could compare in total volume.[119]

For the railroads, the direction of these shipments was at least as important as their size. The vast bulk of Chicago's lumber exports moved west, toward the prairies.[120] By so doing, they helped counterbalance the opposing movement of grain from western farms, the vast bulk of which moved east. Many of the trains that carried wheat and corn east would have gone back empty—at a loss—had there been no lumber to help pay for the return journey. Because railroad companies had to meet their fixed costs no matter what, and because railroad cars had to return to the western granaries whether or not they had anything to carry, railroad managers had good reason to be generous in setting their westbound lumber rates. Lumber therefore moved cheaply relative to many other goods—and from nowhere more cheaply than from Chicago. Since most western railroad companies had their farthest eastern terminals in Chicago and since they sought to encourage the longest possible haul over their own lines, they competed with each other more intensely there t anywhere else. The best way to maximize the return on invested railroad capital was to keep the average cost per ton-mile for lumber lower from Chicago than from anywhere else.

By the 1870s, the whole railroad rate structure for Great Lakes lumber was revolving around Chicago, in ways that made the city's preeminence a self-fulfilling prophecy. Shippers at other locations found that westward-bound railroads charged them for carrying lumber by setting a "differential" between their own rate and Chicago's rate to the same point. To establish the rate from Burlington, Iowa, to Omaha, Nebraska, for instance, a railroad company determined what it would charge for carrying the same quantity of lumber from *Chicago* to Omaha, and then subtracted a fixed number of cents to set the Burlington rate.[121] As long as these differentials remained fixed on a railroad's books, its rates could fluctuate from month to month without ever upsetting the balance of power among Chicago and its competitors.

This system was formalized for the entire rail network in 1884 when George M. Bogue, a railroad arbitrator, announced an official schedule of differentials—differences in cents per hundredweight between Chicago's lumber rates and those of other cities—that would henceforth set rates on all participating railroads for every major shipping center east of the Rockies.[122] With the Bogue award in place, railroads could set identical rates (and hence avoid competing with each other) simply by maintaining the Chicago-based differentials that the arbitrator had established. By so doing, they reinforced the advantages Chicago already enjoyed as a lumber center, and revealed just how much people had come to regard those advantages as a natural condition of trade. Bogue himself felt little hesitation in attributing Chicago's favored status to the logic of a railroad geography that he apparently saw as "natural." In explaining how the city could afford to ship lumber more cheaply even than towns located in the heart of the north woods, he wrote,

> It is no doubt true that the roads reaching Chicago—which is the largest primary grain and stock receiving point in the world—can in their return make rates on lumber without loss, which would net a loss if applied to the roads reaching the pineries direct; and it is doubtless true, also, that the actual cost of the haul from Chicago does not greatly exceed the shorter haul from the Mississippi river; and so long as this is the case, it is natural to expect that the Chicago roads will support the Chicago market.[123]

Support it they did, though for reasons having less to do with nature than with the railroads' own need to employ capital as fully as possible to meet fixed costs and remain profitable. Whatever their reasons, the railroads made Chicago, a city located in one of the nation's most treeless landscapes, the greatest lumber center in the world. In consequence, customers could often buy wood from Chicago more cheaply than from towns whose "natural" advantages—nearness to the pine forests or nearness to prairie customers—seemed superior to Chicago's. Merchants in other lumber towns sometimes complained about the unfairness of not being able to compete against a lumber metropolis located so far from the forests, but they were a distinct minority.[124] Most people saw nothing odd about Chicago's favored position. The geography of capital had once again insinuated itself so successfully into the geography of nature that the primacy of the city's wholesale lumberyards came to seem inevitable—in Bogue's word, "natural."

It must have seemed equally natural for George Hotchkiss, the most important nineteenth-century chronicler of Chicago's lumber industry, to write in 1884, "The history of the lumber trade is the history of the city."[125] Had he sought to show proof for those words, he need only have gestured toward the South Fork of the river, where over half a billion board feet of lumber sat drying in seemingly endless woodpiles whose appearance from afar was like nothing so much as a great gray forest lopped off and squared by some gigantic ax. More than a quarter million trees had died to build those woodpiles, trees that had been growing for more than a century in forests located well over a hundred miles north of the city.[126] If the history of the lumber trade—or rather, the history of those trees—was in fact "the history of the city," one suspects that few Chicagoans recognized it as such. Few had ever seen those forests, and fewer still had seen what those forests were becoming as the ax wielders continued their relentless work on behalf of Chicago's merchants and customers. Although the city, its railroads, and one of its most important industries had all required the sacrifice of those trees, few acknowledged their deaths. They had died so far away, and the years in which they had grown were so much out of mind, that it was easy to forget the roots from which the city had sprung. And where a quarter million white pines had fallen in a single year, surely another quarter million would always stand ready to take their place.

Lost Hinterlands

Or perhaps not.

Just three or four years after Hotchkiss wrote, many Chicagoans began to realize that the city's wholesale lumber industry had entered a new era. During the three decades preceding 1882, the city's lumber dealers had enjoyed an average annual growth in their incoming shipments of nearly 15 percent; during the golden years that preceded the 1857 panic, the city's receipts had bounded upward at average rates of over 35 percent per year. The early 1870s, on the other hand, had seen the market stagnate for more than half a decade before it finally turned upward again. Then, in 1882, Chicago's lumber industry entered an era of upheaval and decline. From then until the end of the century, its receipts actually fell by an average of just under 1 percent per annum, and fluctuated wildly from year to year, seriously destabilizing lumber company profits.[127]

The 1880s marked a sea change for an industry addicted to exuberant growth. Never again would Chicago lumber merchants be able to take for granted the "naturalness" of their city's special relationship to the northern forests. As they moved into the final decade of the century, they found themselves in the unaccustomed position of taking "a rather dreary view of the prospect," knowing that their city had permanently lost its role as lumber wholesaler to the West.[128] Many lumber dealers began to cast about for other lines of business. Some reoriented and reduced the size of their operations; some left the trade; some moved elsewhere; some went bankrupt. In the last few years before his death in 1895, Charles Mears was reduced to promoting an unsuccessful harbor-development scheme in Michigan and to writing bitter, plaintive letters to bankers no longer interested in financing the visions of a lumberman whose time had passed.[129] As his generation began to retire and die, so did Chicago's wholesale trade in white pine lumber.

What had happened?

Ironically, the same forces that had made Chicago the world's leading lumber center gradually began to work against it in the years following the Civil War. As the railroad network spread more deeply into Chicago's hinterland, its competitive logic began to undermine rather than promote the city's interests. New forested regions that lay well outside Chicago's tributary rail system began to compete with the city in selling wood. At the same time, the white pine forests that had supplied Chicago with lumber began to vanish, consumed by the same voracious appetite that had given the city its market. The very success of Chicago in dominating the regional lumber trade was among the most important factors contributing to its decline. Starting in the 1870s, groups that had once seen their interests converge in Chicago's cargo market began to drift apart: Chicago wholesalers, Lake Michigan lumbermen, hinterland lumber dealers, and prairie customers no longer seemed so closely tied to the city's trade. Those who had relied on Chicago's market increasingly resented the power it held over them. As they sought to improve their circumstances, one of their strongest wishes was to find alternative markets that would reduce their dependence on Chicago.

Competitive conditions at Chicago affected even the retail lumber dealers of Kansas and Nebraska, and it was there, out in the retail hinterland, that Chicago's lumber wholesalers saw the first storm clouds beginning to gather. In the face of declining prices, Chicago dealers sought to shore up their profits by sending "drummers"—traveling salesmen—out into the hinterland to persuade farmers and builders to buy lumber direct from their yards.[130] Drummers were men of little means, sometimes failed lumber dealers themselves, who worked on commission to obtain orders on behalf of Chicago lumber wholesalers. At times, they took orders from retail dealers in small towns; at other times, they sold direct to retail customers. By contracting for one of these "direct sales," retail customers who paid cash for large quantities of wood could get wholesale prices for their shipments. Because drummers worked on commission, they had a strong incentive to make as many such sales as possible.

Not surprisingly, lumber dealers in hinterland towns did not take kindly to the drummers' activities. Country yards earned money by purchasing large amounts of lumber at wholesale and reselling them in smaller quantities at higher retail prices. The retail markup generated the income that allowed dealers to pay yard workers' wages, offer credit to customers, stock a wide assortment of lumber, and earn income from invested capital. Country dealers incurred the cost and risk of purchasing and storing lumber so that it would always be available when their customers needed it.[131] From their perspective, the difference between wholesale prices in Chicago and retail prices at the country yard was their legitimate reward for anticipating and meeting the needs of their local customers.

During the 1870s, drummers threatened to snatch the best part of this reward and carry it off to Chicago. Country yards depended for their profits on a mix of sales: their customers included those who needed to buy only a few pieces of lumber, which brought the yard little money, and others who bought lumber for an entire building, which brought much more income to the yard. But it was exactly these latter customers whom the drummers most successfully pursued. By offering wholesale rates to the largest and most profitable buyers, drummers undercut country dealers at their most vulnerable point. Worse, drummers from different Chicago firms competed fiercely for business, driving prices down still further. "Chicago salesmen," wrote a reporter in Iowa in 1876, "are too numerous to mention, and the cutting of price lists is fearful to be-hold."[132] By contributing to the downward pressure on prices in an already depressed market, drummers made it ever harder for retail yards to sell their stocks at a profit.[133]

In this, the drummers were aided by a group of local entrepreneurs known as scalpers. Rather than incur the high costs of maintaining a lumberyard, scalpers sought to identify retail customers who had to make large purchases, and then offered to place an order for them in Chicago at lower prices than the local yard could afford. Since the lumber came direct to its final customer, scalpers had no yard costs and so needed smaller markups to earn a profit. According to irate retail dealers, the scalpers' stock-in-trade was merely their ability to ferret out potential customers, "which information they usually obtain by loafing around lumber offices, or in some other underhanded way."[134] Moreover, they could sometimes take advantage of their customers' inexperience by ordering inferior grades of lumber and pricing them as if they were top quality. Reputable dealers who wanted a long-term relationship with their customers could not afford to resort to such tactics.

To country dealers, drummers and scalpers represented just one thing: unfair competition, much of it emanating from the city of Chicago. The root of the problem was not the drummers and scalpers themselves but the wholesalers who called them into being. By offering to sell lumber to farmers at the same prices that dealers got, wholesalers were competing with their own customers. One angry Illinois dealer argued, "This ought not to be; it is an injustice that every country dealer ought to denounce. . . . It is taking trade from us that we worked hard to obtain, and which we cannot well get along without, as we depend upon the patronage of our immediate vicinity to enable us to keep a stock on hand for the accommodation of the public."[135] The irony of the situation was that retail dealers continued to be among the largest purchasers of Chicago lumber, so wholesalers potentially undermined their own sales. "Manufacturers," wrote the *Wisconsin Lumberman* in an attack on direct sales, "depend more or less on the capital of retail dealers to assist in the disposal of their manufactured stock. That capital is worth at least a fair interest compensation."[136] For country dealers whose profits were disappearing in the face of the new competition, it felt as if wholesalers had violated the most fundamental covenant of the wholesale-retail relationship, and were threatening to dismantle the entire lumber distribution system.

The notion that retail distribution might disappear altogether did not seem farfetched in the 1870s. The direct-sales controversy in the lumber trade was linked to the same post–Civil War agrarian protest movements that had attacked the Chicago grain elevator system. By the 1870s, these

protests had become identified with various branches of the Patrons of Husbandry, otherwise known as the Grange. One of the Grangers' chief economic complaints was having to pay exorbitant prices to "middlemen" who stood between manufacturers and customers in order to siphon off illegitimate profits for themselves. From the point of view of the Grangers, retail lumber dealers were no better than any other middlemen.[137] To escape their clutches, state Grange organizations sought to create cooperative buying agencies that would make wholesale purchases and resell goods to their members with only an "equitable" markup. Although most of these buying cooperatives ultimately lost money and collapsed, their efforts to organize farm customers struck, at least in theory, at the very heart of the country lumber business. When attacking the practices of wholesalers, therefore, retail dealers directed their greatest indignation at sales to members of the Grange. The *Wisconsin Lumberman* argued in 1874, for instance, that "it is the manifest duty of lumber manufacturers to refuse grange representatives the same rates at which legitimate retail dealers are now purchasing. . . . The grange element is assuming the dictatorial tone of monopoly in its worst form."[138]

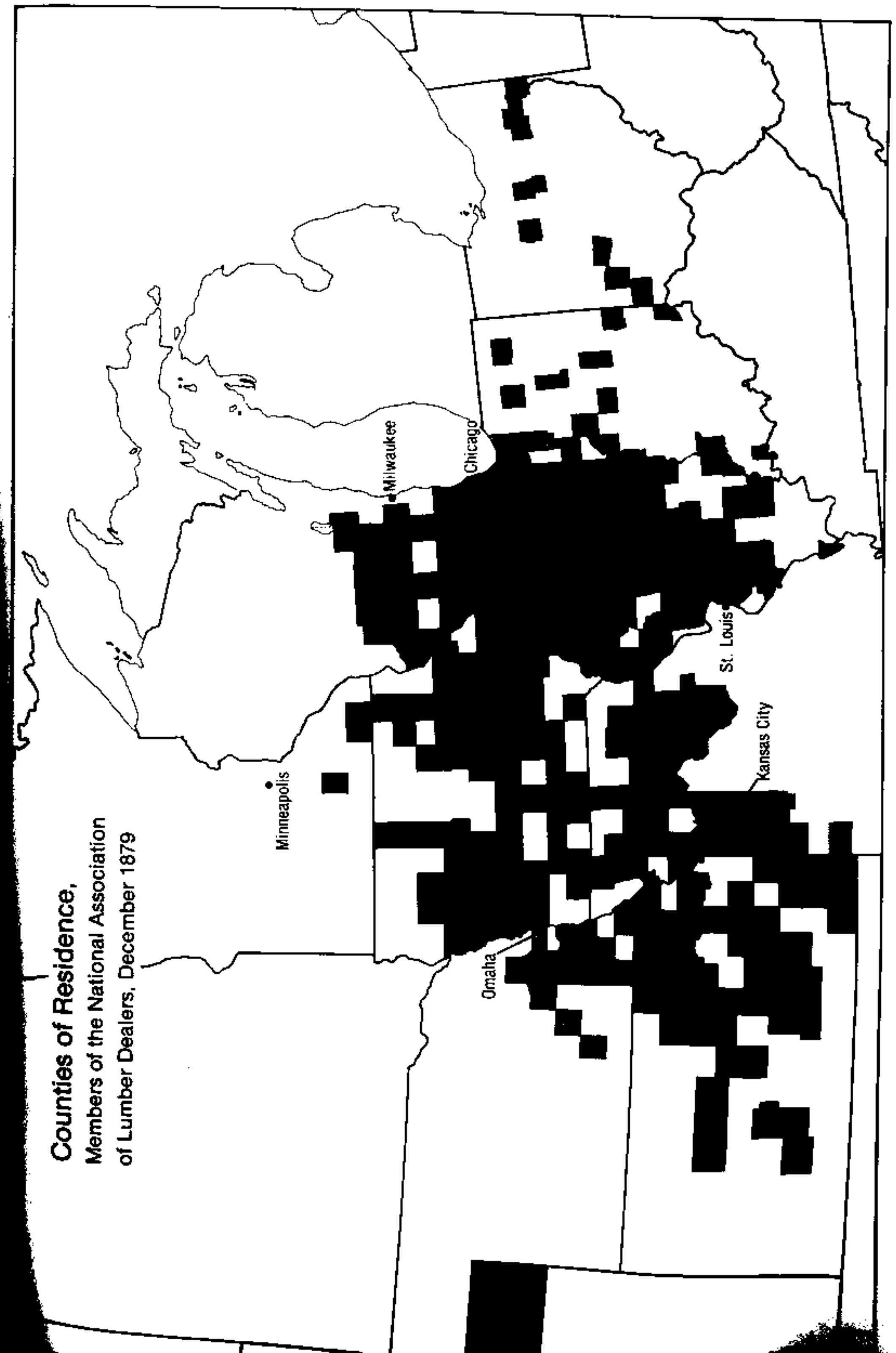
With their customers seemingly organizing to drive them out of business, and with Chicago wholesalers apparently standing ready to help, retail dealers decided that it was time to organize in their own defense. In August 1877, an Illinois retailer wrote a letter to the *Northwestern Lumberman* suggesting that he "would not buy a foot of lumber" from a dealer who would sell to one of his customers.[139] In its next issue, the *Lumberman* editorialized that such a boycott would be a powerful way to pressure wholesalers into changing their practices, but only if dealers acted collectively. "One thing is certain: individually nothing can be accomplished, but let the dealers throughout Illinois . . . unite in an organization for the protection of their trade, and they would wield a power which would make itself felt beyond all question."[140] The *Lumberman*'s editor, W. B. Judson, said that he would throw the full support of his publication behind such an organization, and began in subsequent issues to promote it with great energy. If anything proved the centrality of Chicago's role in the western lumber trade, this was it: a Chicago-based journal seeking to unite dealers in Chicago's hinterland to resist the power of Chicago wholesalers in Chicago's market.[141]

Judson's efforts soon bore fruit. On November 7, 1877, thirty-two retail dealers, mostly from downstate Illinois, gathered in Chicago to form the Northwestern Retail Lumber Dealers' Association.[142] (The name would soon change—reflecting the organization's ambitions more than its actual scope—to the National Association of Lumber Dealers, or NALD.)[143] The preamble to its constitution stated the group's chief goal:

"We believe that the practice of selling lumber to consumers by manufacturers and wholesale dealers at the same prices given to retail dealers, is unjust and injurious to our trade. . . ."[144] To solve this problem, the group proposed a simple enforcement mechanism. If one of its members complained to the association's secretary that a firm had sold direct to a retail customer at wholesale prices, the secretary would write the wholesaler and ask that it pay a fine to the association.[145] If it agreed to do so, the secretary would distribute the money to association members living in the area, giving them the retail profit that the direct sale had denied them. If the wholesaler refused to pay the fine, the secretary would post an announcement calling on all members to boycott that firm. In this way, the dealers sought to enforce the principle that wholesale and retail markets be clearly partitioned from each other. To defend their interests, they elected a slate of officers to organize the boycott, among whom the most important was undoubtedly the enforcing secretary. The first holder of the post, predictably enough, was the *Northwestern Lumberman*'s own W.B. Judson, based in Chicago.[146]

Retail dealers immediately greeted the NALD with great enthusiasm. Within half a year of its founding, over five hundred dealers from eight different states had joined.[147] Despite the group's hope of achieving national status, it drew its membership from the territory where Chicago wholesalers clearly dominated the lumber trade. A map showing the locations of country dealers who had joined the NALD by the end of 1879 looks like nothing so much as a map of Chicago's lumber hinterland: aside from the handful of NALD members in Indiana and Ohio, the vast majority did business in the region bounded by Illinois and southern Wisconsin on one side and western Kansas and Nebraska on the other.[148]

With so many people joined in defense of the retailers' interests, the NALD quickly began to affect the way Chicago wholesalers did business. Although the Chicago Lumbermen's Exchange passed a resolution in February 1878 stating that "the lumber dealers of Chicago will not in the future consider any [NALD] demands made upon them," individual wholesalers did start to pay penalties when they were caught making direct sales.[149] By the end of its first year, the NALD had collected some $2,000 in fines—not a huge sum but a symbolically important one.[150] Wholesalers began to signal their acquiesence in the organization's demands by printing the phrase "We sell to dealers only" on their price lists. By 1880, the NALD had been so successful that Secretary Judson could report to the membership that "the practice of selling to consumers has practically stopped."[151] The problem of direct sales had diminished so much by then that some members began to lose interest in the organization. Income from fines dropped precipitously, membership rolls de-



Counties of Residence,
Members of the National Association of Lumber Dealers, December 1879

clined, and the NALD budget went into the red. By the mid-1880s, the association had abandoned fining wholesalers altogether and was a shadow of its former self.[152]

But the decline of the NALD was testimony to its success: by the mid-1880s, most Chicago wholesalers and hinterland retailers had agreed to protect dealers' markups. The movement to shield retailers from direct-sale competition came just as Chicago's influence over western lumber markets reached its peak. The retailers' efforts to organize on their own behalf contributed to the changing fortunes of Chicago wholesalers, but other, more powerful forces were also at work. These involved direct sales as well, but at the opposite end of the marketplace. If the NALD signified that Chicago merchants were losing control of the demand side of their business, comparable actions by lumber manufacturers were having a similar effect on the supply side. Together, the two would bring irresistible pressure on Chicago's lumber trade.

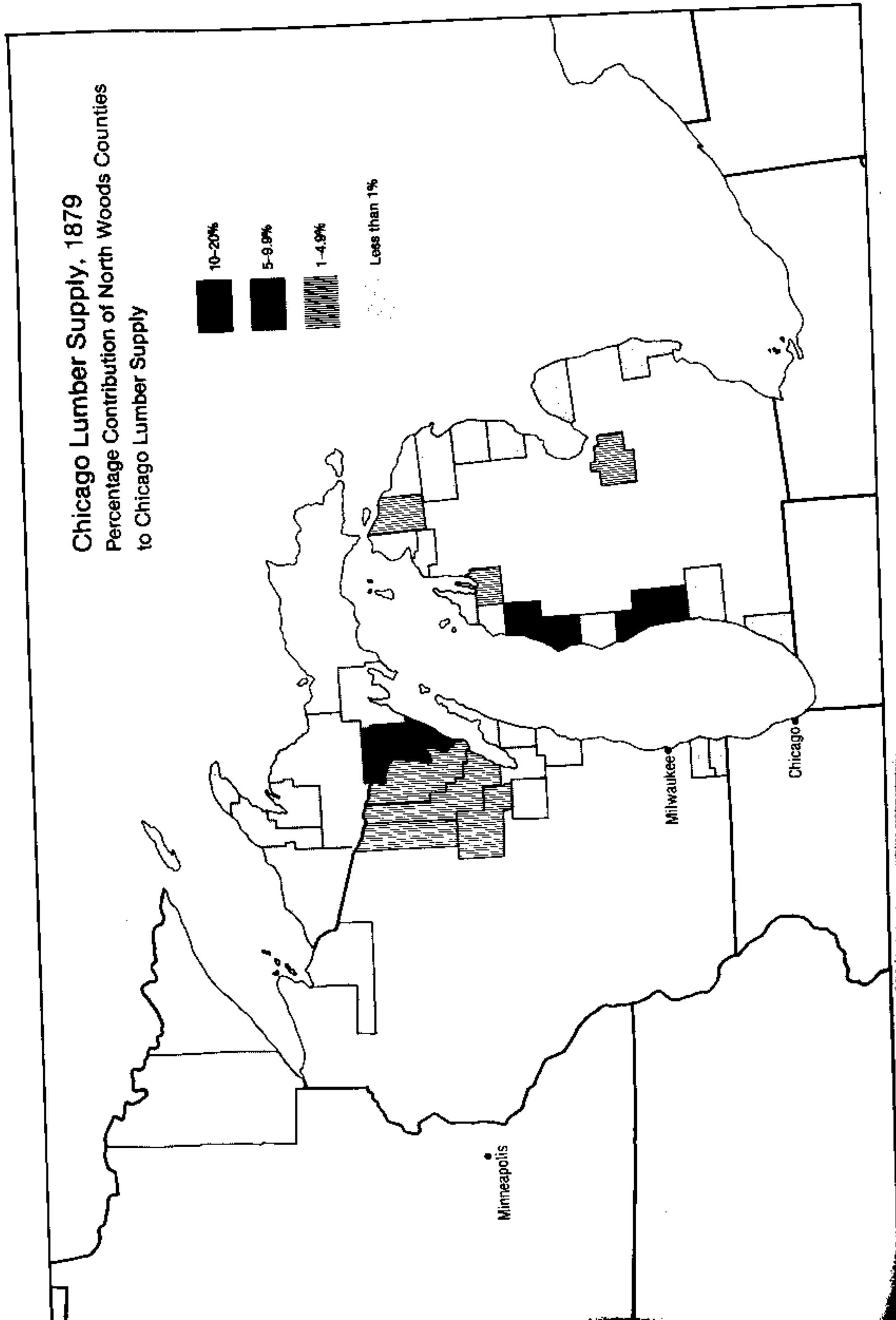
Lake Michigan sawmill operators had long been struggling against competitive conditions that encouraged overproduction. In the short term, overproduction meant that they suffered from chronically low prices; in the long term, it meant that they consumed their forest resources and thus undermined their own enterprise. Because most operators were small and undercapitalized, they had no choice but to undercut each other's prices when bringing their product to market. Like the railroads, lumber manufacturers had fixed costs—wages, debts, and taxes—that had to be met no matter what, so they sometimes had to sell at little profit, or even at a loss, to meet costs. "By the time the lumber is ready to ship it often becomes less a question of profit than of cash with the mill owner . . . ," wrote the *Northwestern Lumberman* in 1879. "But what can he do? With rapidly maturing notes to meet, and with his credit already strained to its utmost limit of endurance, there is no course left open to him but to send his stock as fast as it can be loaded and shipped to this market, and get what he can for it."[153]

Millowners rarely got as much as they wanted. Once shipments arrived in Chicago, the sale was handled by a commission merchant who had more interest in selling lumber quickly than in getting the highest price for it.[154] The commission merchants' eagerness for a fast sale, combined with the need to clear the Franklin Street docks within twelve hours to avoid demurrage charges, encouraged rushed auction sales that only diminished prices further.[155] Worse, wind conditions on the lake often caused lumber vessels to arrive simultaneously, exacerbating the already fierce competition among them. "Being subject to the wind and weather," lamented the *Lumberman*, "it universally happens that the stock

arrives here in fleets, and the larger the fleet the greater the slaughter."[156]

The mill operators' own financial urgency allowed Chicago to become a buyer's market that yielded some of the lowest prices in the region. The manufacturers' acute seasonal need for short-term credit drove them to the one market where they knew they could get quick cash, even if it meant that they were forever selling lumber at lower prices than they liked. Under such circumstances, the only way they could keep up with costs was to cut more trees, contributing still further to the overproduction and saturated markets that had created low prices in the first place. Chicago thus became the focal point of a vicious circle: undercapitalization caused overproduction, which in turn kept prices low and accelerated the destruction of the northern forest.[157] The *Lumberman* summed up the problem by attributing it to "so many men . . . striving to carry on a larger business than their capital will warrant" and, as a result, having to turn natural capital into liquid capital merely to survive. "The only reasonable explanation of this paradoxical state of affairs . . . ," the *Lumberman*'s editors wrote, "is that the mill men . . . are using up their capital, as it exists in the form of stumpage, for no other end than to simply keep themselves in business."[158]

For all these reasons, Michigan and Wisconsin sawmill operators had long begrudged their dependence on the Chicago cargo market. Although many of them desperately needed it for the cash and credit that kept them in business, they disliked having to accept its low prices, having to trust its commission merchants, and being at the mercy of its wholesalers. The extent of their dependency reveals itself in maps of Chicago's supply hinterland at the peak of the city's dominance, in 1879.[159] A comparison with the earlier, 1859 map (see page 174) shows that Chicago's supply area had gradually shifted to the north; less visible but no less real was its movement into the interior of Wisconsin and Michigan as timber began to disappear from the lower reaches of the logging rivers. Green Bay had ceased to be a significant source of lumber for the city, having been replaced by the new twin lumber towns of Marinette and Menominee, which received their logs from the Menominee River, on the Wisconsin-Michigan border. The mills in those two communities now accounted for roughly 14 percent of Chicago's total lumber supply. Only Muskegon, on the eastern shore of the lake, continued to surpass them. It now accounted for almost 30 percent of Chicago's total receipts—more than half again as much as any other city in 1859. This suggests the extent to which Chicago was beginning to depend on fewer sources of supply. But the individual mill towns of its hinterland were still far more depen-



dent on it than it was on them. All three of these towns sold 85 percent or more of their output to Chicago in 1879.[160]

Given the extent of their dependency on Chicago's markets, it is hardly surprising that millowners began to seek customers in places where people would pay better prices.[161] Many of them saw Chicago's wholesalers in much the same way that Grange members saw retailers: as middlemen who siphoned off a lion's share of the profits from lumber sales.[162] Beginning in the early 1870s, millowners started speculating about how much they might benefit if only they could sell wood to retailers direct from the sawmill instead of sending it through Chicago. In 1873, for instance, the *Michigan Lumberman* offered the prescient observation that "if we handled, piled, seasoned, assorted, and sold our own product, we would save to ourselves the amount which makes the middle men rich."[163] Making direct sales from mill to retailer required Lake Michigan lumbermen to take over all the tasks that the yards in Chicago had been handling for them since the 1840s. This consolidation entailed new infusions of capital and greater annual expenses, but it held out the promise of liberating the mill towns from the hold of Chicago's market.

Fortunately for the millowners, the means of liberation were just at hand. The railroad network had continued to expand in the years following the Civil War, and by the 1870s various roads for the first time began to make their way directly into the lumber districts. Muskegon acquired its first rail connection to what became part of the Lake Shore Railroad in 1869; and Marinette-Menominee became a station on the Chicago and Northwestern in 1871.[164] Although railroad rates were initially high enough that lake shipments to Chicago continued to be more profitable, that would soon change. Roads passing through the relatively unpopulated north country had to carry freight if they were to earn any money at all, and freight in the pine forests meant lumber. Railroad companies therefore began to modify their rate structures to try to attract shipments away from Lake Michigan, which in turn meant diverting lumber from Chicago's market.

The late 1870s also saw the railroads change their rate policies at Chicago itself in a way that delivered a body blow to the city's lumber trade. Until 1876, the railroads had charged for lumber either by the carload or by how many thousands of board feet a car contained. Wholesalers benefited from this policy because it did not differentiate loads of lumber by how much they weighed. Everyone assumed that a carload weighed somewhere between 20,000 and 24,000 pounds, the official maximum load for most freight cars, and few bothered to check this assumption against reality.[165] But because much of the wood leaving Chicago was still green, the railroads were in fact carrying a lot of excess weight in damp lumber—and not charging for it. Railroad managers began to discover that many lumber shipments weighed an undeclared 40,000 pounds or more, potentially damaging car and roadbed alike while paying nothing for the extra burden.[166] Toward the end of 1876, therefore, the principal roads operating out of Chicago began to charge for lumber on the basis of weight rather than volume.[167] This initially put Chicago at a disadvantage in competing against towns where railroads still measured shipments by volume, but by 1880 a regionwide cartel involving all the major railroads had adopted weight as the only permissible way of measuring lumber shipments.[168]

"By requiring the transportation of lumber to be paid for by the pound, instead of the thousand feet," wrote the *Northwestern Lumberman* in 1877, the railroads' new policy had "practically cut off the trade in green lumber while it has proportionately increased the demand for dry."[169] Innocuous as this change might seem on the surface, it was a disaster for the Chicago wholesalers. Previously, retail yards and other hinterland customers had ordered their lumber by the carload, in the knowledge that transportation costs made this by far the most economical way to buy wood. With every additional piece of lumber now increasing the freight charge for a shipment, retailers became much pickier about the amounts and kinds of lumber they bought. "Now that every hundred pounds costs so many cents . . . ," declared the *Lumberman*, "it is much better to buy from the yards the dry stock in just such quantities as may be most wanted."[170] The new freight rates enabled dealers to place many more small orders for lumber, and still compete effectively with those who bought large shipments.

Chicago's chief advantage as a lumber market had always been its ability to move wood in large volume, which was partly attributable to the hidden discount its merchants earned by not paying full freight rates. With rates reassessed and retailers more selective in their orders, part of that advantage disappeared. In response, the Chicago wholesalers became warier themselves about buying green lumber. Knowing that it would sit in their yards—on expensive urban real estate—until it dried, Chicagoans began to urge the Lake Michigan manufacturers to hold their cut at the mill until it had lost weight. In so doing, the wholesalers cut their own throats. With dry lumber suddenly at a premium, and with railroad service becoming available direct from the mill towns, lumber manufacturers finally saw the opportunity to change their earlier policy of shipping lumber to Chicago as soon as they milled it. By the 1880s, the largest sawmills at places like Muskegon and Marinette-Menominee had become financially secure enough that they no longer depended so heavily on the cash they could obtain from the Chicago cargo market.[171] Instead, they set aside land at their mills and began to stack lumber to dry before shipping it to market.

But once it was dry, there was no longer as much incentive to send it to Chicago. Rather than sell it at auction in the notoriously competitive and low-priced cargo market, why not ship it direct to the retail dealers who were willing to pay premium prices for the driest and best wood? By sending only inferior wood to Chicago, sawmill operators could keep for themselves the most profitable lumber that most easily paid for its own rail transportation. They could finally cut themselves loose from the market whose dominance had irritated them for so long. "The manufacturer who piles his lumber," wrote the *Northwestern Lumberman* in 1881, "occupies a comparatively independent position toward those who buy. He does not stand in mortal fear of a break in prices, or run the chance of sending a heavy consignment to the cargo market at the wrong time, and having to stand the consequent loss. . . . He has his stock where it will keep, and he is prepared with the facilities for holding it. . . ."[172]

By the mid-1880s, the Chicago yards were finding themselves in the unaccustomed position of not being able to maintain full assortments of lumber, especially not in the higher grades. The cargoes that came to the Franklin Street docks for sale at auction were less and less satisfactory as a source of supply. Instead, wholesalers who wanted to keep up the quality of their stock increasingly had to journey up the lake to buy direct from the mills.[173] There, they had no more of an advantage than any other buyers, and found themselves having to compete for wood—sometimes against their own retail customers—much harder than before.[174]

Early signs of how bad things were getting for the wholesalers came in 1883, when the big Menominee mills, which had long maintained yards in Chicago, began to discuss closing their operations in the city.[175] In 1885, one of the largest of them, the Kirby-Carpenter Company, actually did so, while others substantially cut back their operations. In explaining their actions, Kirby-Carpenter officials identified what they regarded as the growing disadvantages of the Chicago market: "big dock rents, heavy switching charges, outside prices for labor, the cost of keeping a large fleet of barges in commission, and all the other expenses of maintaining a yard here." Given these problems, they concluded that the most profitable course would be to sell lumber "as near the saw as possible."[176] Few statements more succinctly captured the declining influence of the Chicago marketplace. Some of the city's most prominent lumbermen were in charge of the Menominee mills, and that only drove home the lesson more powerfully.

The decision of the Menominee millowners to abandon Chicago paralleled another broad change in the industry: the migration of lumbering into new regions that lay outside the city's "natural" tributary territory. Since at least the Civil War, Chicago had been competing with the lumbermen of the Mississippi Valley. Trees cut on the northern reaches of such rivers as the Wisconsin, the Black, and especially the Chippewa floated downstream to the Mississippi and thence to major mill towns in Iowa: Clinton, Davenport, Muscatine, and others.[177] Although Chicago's privileged railroad rates had earlier allowed the city to ship lumber even into Iowa—the immediate hinterland of these mills—the changing railroad economics of the 1880s made that harder to do. Moreover, the lumber interests of the upper Mississippi had by then come under the control of Frederick Weyerhaeuser's Mississippi River Logging Company.[178] Weyerhaeuser had begun as a mill operator in Rock Island, Illinois, but had gradually built a coalition of millowners and logging companies along the Mississippi and the Chippewa River in Wisconsin. The Weyerhaeuser syndicate was still in its early stages and had not yet gained the full corporate organization that characterized it in the twentieth century. Still, it represented a regionwide coordination of lumber production and marketing that had no analogue in Chicago's highly competitive market. By the 1880s, Mississippi Valley lumber firms were competing ever more effectively against Chicago's wholesalers.

Worse still was the arrival of competition from a different sector entirely: the South. In the years following the Civil War, lumbermen who found their supplies diminishing in the Northeast and Great Lakes regions began to buy up timber acreage—most of it in yellow pine—in Arkansas, Louisiana, and other southern states.[179] As railroads extended their lines into the southern forests, manufacturers began to sell yellow pine lumber direct from their mills. Some of that lumber headed north into the heart of white pine territory. The first of it arrived in Chicago in 1877, where the *Northwestern Lumberman* observed that it took "a much handsomer finish" than white pine and declared that it would "not be long before yellow pine flooring will be extensively used in this section."[180]

The prophecy proved correct, and conservative. Yellow pine could be used for most of the same purposes as its northern cousin, and it had even greater strength.[181] By 1884, it was arriving in ever larger quantities even for use in Chicago itself.[182] Kansas City soon emerged as a major rail center for the western distribution of Arkansas yellow pine, but, in keeping with the other innovations of the decade, most southern pine sold direct from the mills.[183] As if to prove that great urban wholesale centers

were no longer so important to the lumber trade, by the end of the 1880s yellow pine had succeeded in claiming most of the trans-Missouri region for itself. In consequence, Chicago could no longer sell much lumber in Kansas or Nebraska and lost much of Iowa and Missouri as well.

As the Great Plains ceased to be an effective outlet for white pine, competition in the upper Mississippi Valley became more severe. At the same time that Chicago wholesalers were losing their western markets, sawmills in the Mississippi Valley and interior mills at places like Marinette-Menominee and Wausau, Wisconsin, were losing theirs. All had to look for possible sales to the same customers in the same reduced area, which consisted almost entirely of Chicago's old hinterland. "Chicago," announced the *Northwestern Lumberman* in 1886, "can no longer claim any portion of the prairie northwest as exclusively its own."[184]

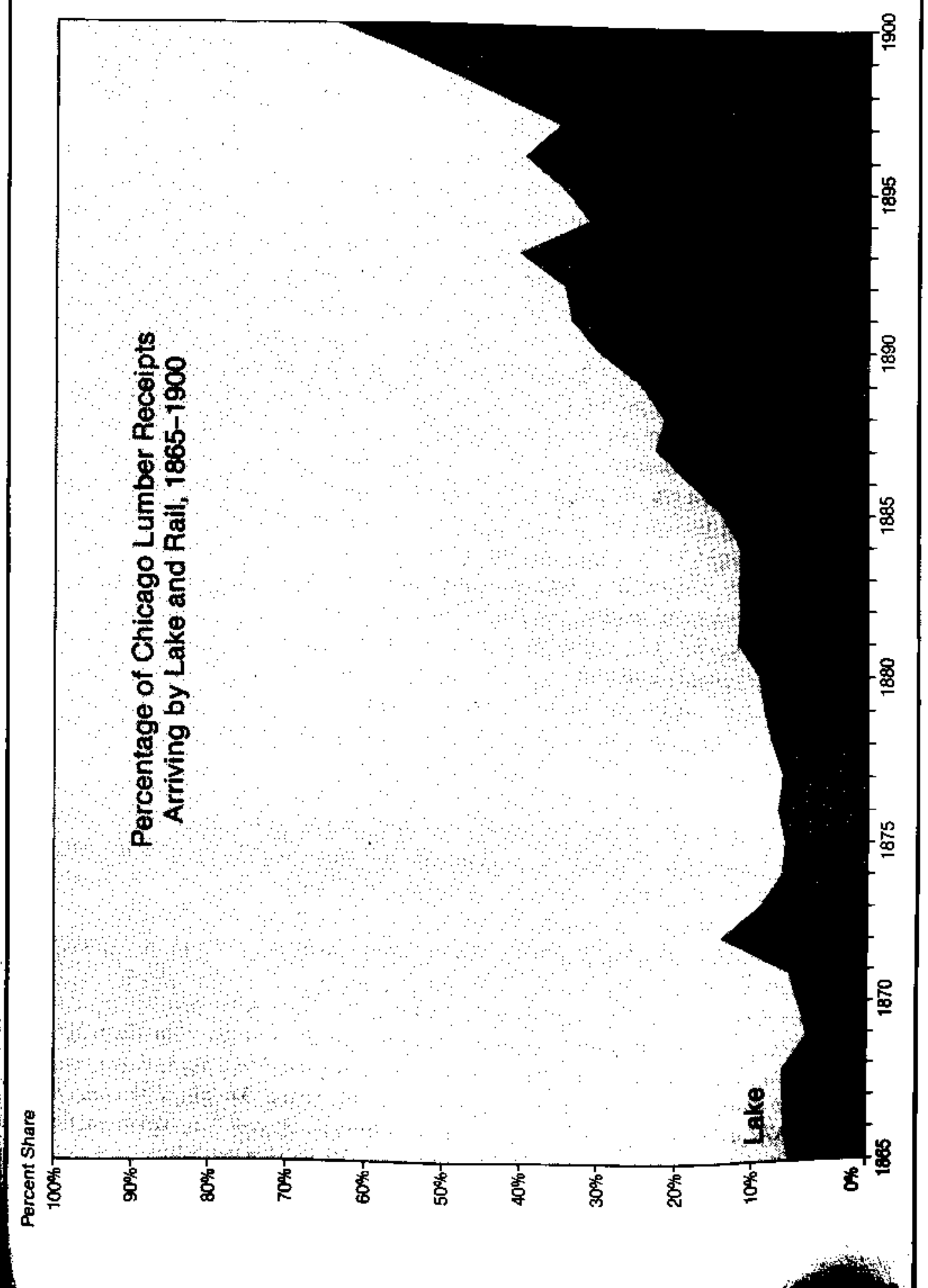
Much to their horror, the city's wholesalers for the first time found that they were having trouble competing in southern Wisconsin and even in Illinois. By 1890, the *Lumberman* was reporting that the city's trade in "piece stuff"—lumber for the studs and joists of balloon-frame buildings, the most basic mainstay of the Chicago market—had been reduced to "a scramble, with a hard pushing competition in this state and a few counties in Indiana." "The western trade in such lumber," it added, "has been given up, probably for all time."[185] Unbelievable as it must have seemed to old-time lumbermen, the editors suggested that the only way Chicago dealers could continue to compete would be to purchase and pile wood *at the sawmills* and then ship direct from there without ever bringing it to the city. Operations in Chicago would be reduced merely to taking orders for customers. The Chicago dealers' only other hope was to try to "confine themselves to territory in which they know that they can sell lumber in competition with anybody"—even though "very little of such territory, if any," was left.[186]

Railroad expansion was undoubtedly the single most important cause of these changes. Increasing quantities of the region's lumber were cut at mill towns that used rails, not rivers or lakes, to carry their output to market. People nicknamed them rail mills because of their location away from the waterways that had once been mandatory to lumber manufacture. Loggers had been so thorough in their work that few remaining forests were anywhere near the banks of rivers large enough to carry a log drive. To continue cutting, lumbermen had to make expensive investments in narrow-gauge railroads, raising capital costs to such a degree that small logging operations had little hope of competing. The coming of the logging railroads in northern Michigan and Wisconsin (already evident in interior regions of the Upper Peninsula on the 1879 map of

Chicago's supply areas) meant that logging was less bound to the flooding streams and the wheel of the seasons.[187] Woodsmen could cut and transport trees year-round, effectively breaking the old reign of the winter ice. In much the same way, loggers could finally cut and market species other than white pine. Trees that had never before been marketable, because they did not readily float—ash, oak, hickory, maple, and other hardwoods—sold at a profit now that they could ride the rails.[188]

Perhaps the most revealing proof of how much Chicago's market changed during the 1880s and 1890s was the way the city itself acquired lumber. Until 1880, over 90 percent of Chicago's lumber arrived via Lake Michigan.[189] In that year, the railroads for the first time accounted for more than 10 percent of the city's supply, and their share soon increased dramatically. By 1890, they were supplying nearly 30 percent of Chicago's lumber; by the end of the century, well over 60 percent. The days of lake transportation were rapidly drawing to a close. Chicago's unique role in the lumber trade had been possible only at the intersection of lake and rail, where the products of the forest met the needs of the prairie. Now that lumber was leaving the lake, the reasons for Chicago's dominance were disappearing as well.

The glory years were over. Although they continued to handle enormous quantities of lumber, the Chicago merchants who had once grown rich by selling wood as far west as the Rocky Mountains now had to work hard to sell it in their own backyards. The same railroad that had given the city its dominance now took it away, driving "beyond every spatial barrier" to achieve "the annihilation of space by time"—to repeat Marx's phrase.[190] The editors of the *Northwestern Lumberman* would hardly have agreed with Marx's politics, but they shared his analysis in lamenting what had happened to the old "natural" boundaries of the lumber trade. "The integrity of sectional fences," they wrote, "has been utterly destroyed. The distributers of lumber are seeking a market anywhere and everywhere, without reference to old lines of territory, with the result that nobody's trade is safe or profitable, as it should be."[191] But they failed to note how artificial those original "sectional fences" had been, dependent as they were on the brief moment when Chicago's rail network had been the sawmills' only effective passage to the Great West. By "seeking a market anywhere and everywhere," the merchants of the new rail mills were only doing what Chicagoans had done a generation before. In the perennial instability of the marketplace, the geography of capital had shifted yet again, replacing one version of second nature with another.



The Cutover

Beneath the geography of capital, underpinning it and sustaining it even as the two transformed each other, there was still the geography of first nature. To explain why Chicago lost its wholesale lumber trade, one must ultimately turn to that older geography. Behind the retailers' resentment of the Chicago drummers, behind the millowners' efforts to escape the influence of the cargo market, behind the competition of other regions and the coming of yellow pine, behind even the proliferation of the railroads, there remained the forest itself. Without it, none of the others would have mattered. Chicago lost its lumber trade because the forest was finally exhausted by the effort to bring it to market.

Even as late as the early 1870s, few had believed this possible. "*Will* our pine timber soon be exhausted?" asked a journalist in a popular Chicago magazine in 1870. "We say no. None of our generation will see our pine forests decimated."[192] Efforts by early conservationists to suggest that the forests of Michigan, Wisconsin, and Minnesota were finite and should be used more carefully were greeted with scorn by the lumber press.[193] A case in point was the reaction to James S. Little, a wealthy Canadian lumberman unusually concerned about preserving forest resources, who wrote a long article in 1876 on the timber supply of the United States and Canada. In it, he suggested that Great Lakes loggers were "not only burning the candle at both ends . . . but cutting it in two, and setting the match to the four ends to enable them to double the process of exhaustion."[194] In the face of Little's estimates, the editors of the *Northwestern Lumberman* simply argued that his statistics were inadequate and his economic assumptions naive. They showed no real concern about whether he might be right in the long run about the potential destruction of the forest. They were equally hostile to the special report on the nation's forests published in the 1880 census, and devoted many columns to refuting its pessimistic estimates of the remaining timber supply.[195]

During the 1880s, however, as Chicago lumbermen reeled from one bad piece of news after another, there were more signs that the white pines might in fact be giving out. For instance, sawlog prices, along with the prices of forested real estate, were steadily rising. Michigan sawlogs in 1879 were selling for $14 per thousand feet, when just four years earlier even fully milled coarse lumber had not cost as much.[196] Just as worrisome was the general decline in the quality of trees that loggers were

cutting. In 1870, the typical sawlog reaching a Michigan mill town measured sixteen to eighteen inches in diameter, and no one considered a tree worth cutting if it was not at least a foot wide. Ten years later, the minimum size had fallen to six to eight inches, so the average log contained far less lumber than before.[197] The costs of logging rose accordingly. By 1883, loggers in the Muskegon district were cutting trees higher into the branches than they ever had before; they cut almost the entire tree into logs.[198] To make matters worse, trees still worth cutting were located farther and farther from the lumber streams. In 1879, for instance, the *Lumberman* reported, "There is not to-day a navigable creek in the state of Michigan or Wisconsin and we may, with little risk, add Minnesota, upon whose banks, to the head waters, the better grade of timber is still standing within a distance of two to three miles."[199]

Many of the technological and economic changes sweeping the western lumber trade were responses to these fundamental shifts in the nature of the forest. With suitable trees no longer in easy reach of the watercourses, logging railroads became an ever more necessary, if expensive, investment. The rising sale of hardwood lumber from Michigan and elsewhere occurred partly because railroads could now carry such wood, but also because there was so little white pine lumber left to compete with it. The rapid disappearance of uncut pine land led lumbermen to realize they were running out of timber, and many of them therefore began looking to the uncut forests of the South and the Pacific Northwest. Frederick Weyerhaeuser's decision to move his chief field of activity to Idaho and Washington was only the most celebrated of these movements, for the rise of the southern yellow pine industry also followed the search of Great Lakes capital for new timber investments.

The ability of yellow pine to compete at all in the heart of white pine country was among the most telling signs that the best of the white pine was already gone. When Chicago wholesalers started having trouble obtaining the higher grades of white pine, it was not just because manufacturers were holding back those grades to sell directly from the mill but also because higher grades no longer existed.[200] In 1890, sawmill operators in the Mississippi Valley met to suggest that regional grading scales be shifted downward so that lower-quality wood could be graded higher than before. In the very act of trying to obscure the truth, they acknowledged that their forests were disappearing.[201] By the 1880s, that realization was dawning on even the most skeptical. As early as 1881, the *Northwestern Lumberman* was admitting that "the old prophets must be accredited with a remarkably correct appreciation of the timber supply."[202] By 1887, its editors had joined the prophets of doom to declare that "the end of the, at one time supposed inexhaustible, supply of white and norway pine timber is altogether too near."[203]

Lumber production in the Great Lakes peaked in the early 1890s, and began to decline precipitously thereafter. The Michigan white pines gave out first, followed by those in Wisconsin and finally by those in Minnesota.[204] As the loggers finished their work in the forests they had consumed, they left behind a literal wasteland. Great piles of slash—small timber, branches, and other debris that had little economic value—remained on the ground where they fell, sometimes in piles ten to fifteen feet high. They accumulated over a vast area, turned brown in the summer heat, and waited for the dry season, when a spark might set them alight.

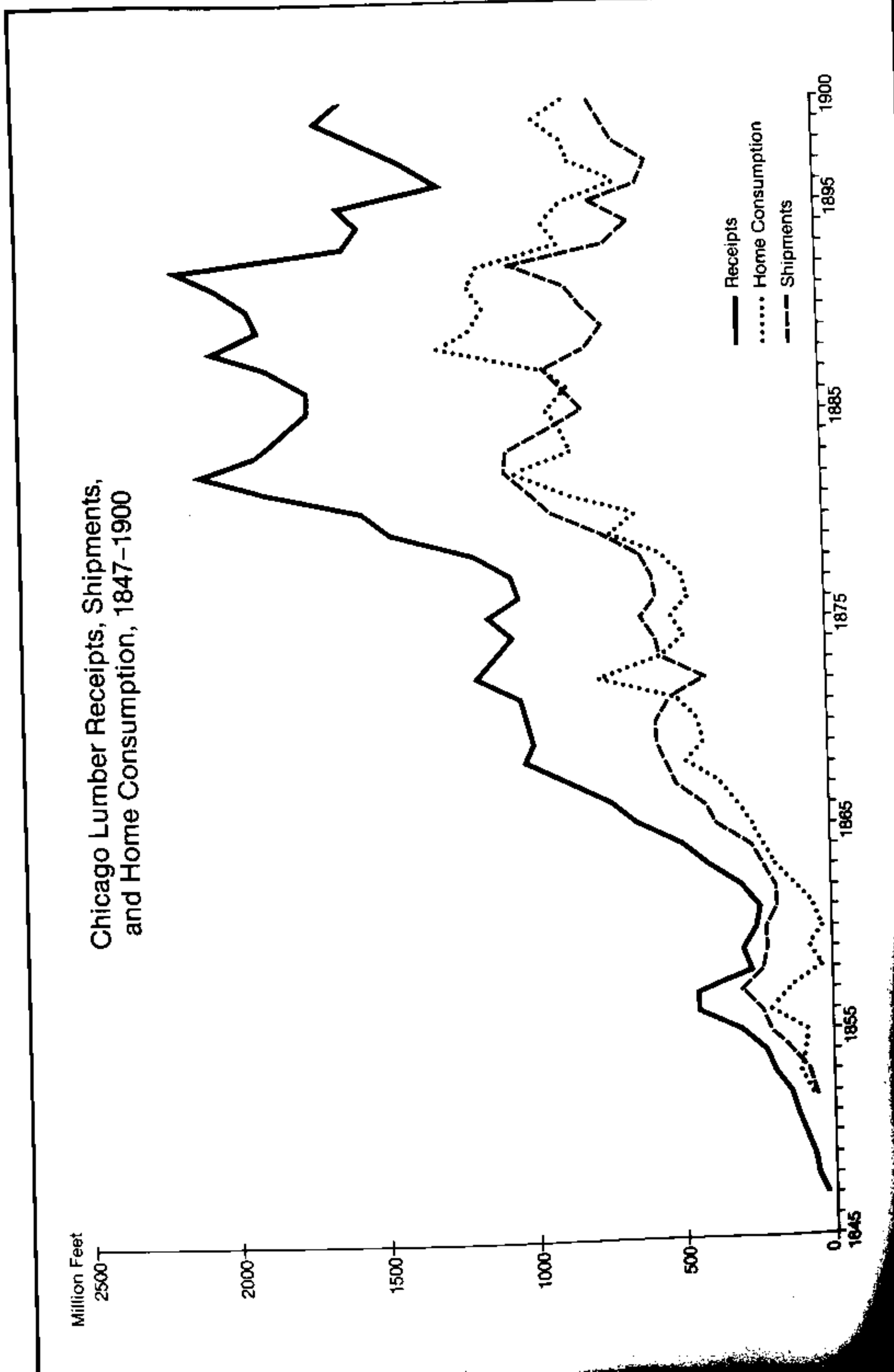
Fires had long been common in the Great Lakes forests. Indeed, fires were an important reason why the white pine was so abundant in the region, for the tree was adapted to reproduce most effectively in newly burned-over lands. The most extensive stands of white pines were often on the sites of old forest fires. But the fires that followed in the wake of the loggers were not like earlier ones. As the loggers cleared the forest, farmers—believing the old theory that the plow followed the ax—moved onto the newly cleared land to plant their crops. To remove the loggers' debris and to ready their fields for plowing, they typically followed the pioneer practice of setting fire to the ground in the fall. In so doing, aided by an occasional spark from the logging railroads, they ignited the immense tracts of clear-out land to produce some of the worst forest fires in American history. The 1871 fire at Peshtigo, Wisconsin, killed perhaps fifteen hundred people, far more than died in Chicago during the fire that burned down the city at almost the same time. Comparable holocausts occurred in Michigan in 1881, at Hinckley, Minnesota, in 1894, and—the last of the great slash fires—at Cloquet, Minnesota, in 1918.[205]

But human deaths and the destruction of would-be farming communities were not the only consequences of the great fires. They killed much of the remaining white pine forest as well. The tree's ability to flourish in the wake of natural fires depended on the seeds its cones released after undergoing the intense heat of burning. After a fire, tall parent trees ordinarily released their seeds to the newly cleared, now sunny ground beneath them, where young trees thrived and achieved maximum growth. In logged areas, few parent trees remained to reseed after a burn. As a result, other species, especially the deciduous aspens and birches with their ability to reproduce from stumps and suckers, began to invade the pine's old territory. They were aided in this at the end of the nineteenth century when people accidentally introduced to North America a European plant disease, the white pine blister rust. Fatal to a majority of white pines in moist areas like the north woods, the rust had reached the Great Lakes forest by the second decade of the twentieth century, and it diminished still further the chances that the white pine forest would ever fully reproduce itself. Aspen and birch, in alternation with balsam fir, appear to have permanently replaced the pines in areas where the forest has been left to its own devices. In many places, however, people in the twentieth century have systematically replanted pines and other desirable tree species, so stands of pines do still exist in many areas of the north woods.[206]

The dream that the "Cutover" district would become a fertile agricultural landscape proved within two or three decades to be an illusion. Clear-cutting and the fires that followed it reduced what little natural fertility the soil already had, and contributed to problems of erosion and flooding. More important, the poorly drained, heavily glaciated soils typical of the northern forests were inherently inhospitable to agriculture, as was the climate. Farmers who tried to earn a livelihood amid the stumps of the old pines quickly discovered that doing so was very hard indeed. Potatoes might survive in the poor soil, but few other crops did well there. Already by the late 1890s, a government report could foresee "no prospect that our denuded lands will be put to agricultural uses."[207] Old pinelands, whether abandoned by lumbermen or farmers or both, became an increasing burden on county and state tax rolls as their owners went into arrears and let the government claim the lands. The problem of what to do with the resulting depopulated landscape continued to haunt Great Lakes states well into the twentieth century.[208] As time went on, the north woods found new economic possibilities in the rise of the paper industry, which made good use of fast-growing species like birch and aspen; and the regrowing forests also became prime recreational country for Chicagoans and other inhabitants of the Great Lakes region. All of that lay in the future. In 1900, the Cutover was just that: cut over, and abandoned.

The newly treeless countrysides of northern Michigan and Wisconsin were far from the minds of most Chicagoans by the 1890s. Even though the city's wholesalers were abandoning their old western haunts to new competitors, they never lost their home market. Ever since the Civil War, people in Chicago itself had consumed a gradually rising share of the lumber that entered its yards. This home consumption eventually became the mainstay of the lumber trade, with regional wholesalers shifting toward a local retail business. No one feared that Chicago itself would run out of wood, for the city was now attracting lumber from across the entire nation. The demise of the white pine forest thus posed no permanent problem for the Chicago lumber trade.

The internal growth of the city had replaced the settlement of the



prairies as the driving force behind lumber sales. Some even saw in the wholesalers' adversity the signs of future opportunity: by losing the trade of western farmers, hadn't the lumbermen acquired the much more profitable trade of the new metropolis? "The time is rapidly approaching," wrote the *Northwestern Lumberman* in 1889, "when the city demand will be much more important than that in the rural districts."[209] Cities, and especially Chicago, had become the centers for great concentrations of wealth, and the wealthy were likely to spend huge sums on mansions and other expensive structures for which white pine was hardly needed. How fortunate, then, that just as the northern forests were disappearing, "hardwoods have come in and pine has been in a great measure ruled out"—a wood unworthy of the new urban elite.[210] Demand for cheaper lumber would continue to come from people building the growing numbers of working-class houses in the city, as well as the prosperous farmers living in the immediate vicinity of Chicago, so lumber dealers could look forward to ongoing business from those markets as well.[211]

And what of the ravaged pinelands to the north? What was their relationship to this new vision of urban harmony and grandeur? Presumably those Chicagoans who thought about it, like most other Americans, saw the vanished forests as a worthy sacrifice to the cause of civilization. The fate of those forests had been prophesied as early as 1868, when a visitor to upper Michigan could declare in a remarkable passage, "The waste of timber is inevitable." He went on,

> The pioneer is insensible to arguments touching the future supply; to him the forest is only fit to be exterminated, as it hinders his plough and obstructs his sunlight. When Northern Michigan becomes, like Southern Illinois, a great rolling prairie of grass and grain, whose horizon is unbroken as the horizon of the ocean, the want of foresight that permitted the destruction of these magnificent forests will be bitterly lamented. But the lament will come from the next generation: the people of this will only boast the swift change of the wood and the wilderness to the fertile field, and exult in the lines of towns and cities which spring up along its watercourses and overlook its lakes.[212]

What made this vision so remarkable was its partial truth. The deaths of the forest trees had indeed built farms on great rolling prairies, and towns and cities had indeed sprung up as a result of the white pines' sacrifice—but not on the forest soil itself. The wealth that the northern pines had stored as natural capital had been successfully transformed into a more human form of wealth, but the vast bulk of it had been moved to another soil, another landscape, another ecosystem. The forest had been consumed in pursuit of a vision that would triumph in the grasslands and, even more, in the city of Chicago—but not in the Cutover. The old blackened stumps would continue to serve as reminders, like the gray stones in an abandoned churchyard, that the city and its hinterland had originally been the products of a kind of theft that few now wished to remember. A sizable share of the new city's wealth was the wealth of nature stolen, consumed, and converted to human ends. The task of forgetting that fact was easier the farther one traveled from the north country, and easiest of all when one stood in the shadows of the tall stone buildings of Chicago's Loop.

A few remembered nonetheless. Toward the end of his life, Isaac Stephenson, one of the most successful of the Marinette-Menominee lumbermen, would write in his autobiography,

> The habitual weakness of the American people is to assume that they have made themselves great, whereas their greatness has been in large measure thrust upon them by a bountiful providence which has given them forests, mines, fertile soil, and a variety of climate to enable them to sustain themselves in plenty. . . .[213]

From the wealth of nature, Americans had wrung a human plenty, and from that plenty they had built the city of Chicago. Chicago's relationship to the white pines had been exceedingly intricate, emerging from ecological and economic forces that for a brief time had come together into a single market, a single geography. The tensions in that market and that geography finally destroyed the distant ecosystem which had helped create them—but by then it no longer mattered. Perhaps the greatest irony was that by surviving the forests that had nurtured its growth, Chicago could all too easily come to seem a wholly human creation.

5

Annihilating Space: Meat

The Great Bovine City of the World

Although in retrospect the significance of Chicago's nineteenth-century grain elevators and lumberyards seems undeniable, visitors to the city in the years following the Civil War often failed to recognize their import. The scale of these structures might be outsized, but their essential function still appeared familiar and ordinary. The elevators concealed most of their machinery and far-reaching effects behind tall, windowless façades that did not invite closer scrutiny. One could marvel at them without much understanding what they did, and without sensing their relationship to the daily pandemonium at the Board of Trade. The fragrant piles of drying pine, for all their vast extent, bore enough resemblance to lumberyards elsewhere that they rarely became part of a tourist's itinerary. In each case, one could easily miss their implications for city and country alike.

The same could hardly be said of that other great institution where western nature met the Chicago market: the stockyards. Tourists might hesitate to subject themselves to the stench and gore of the place, but all knew that something special, something never before seen in the history of the world, was taking place on the south side of the city. Opinion differed about whether it should be an essential stop on a visitor's itinerary. Many saw in it the pinnacle of Chicago's social and economic achievement, the site, above all others, that made the city an icon of nineteenth-century progress. "Great as this wonderful city is in everything," wrote a British traveler, "it seems that the first place among its strong points must be given to the celerity and comprehensiveness of the Chicago style of