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THE JOY AND THUNDER DAYS: Michigan Railroading During the Twentieth Century in the Time of the Steam Locomotive

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David Dylan Jones

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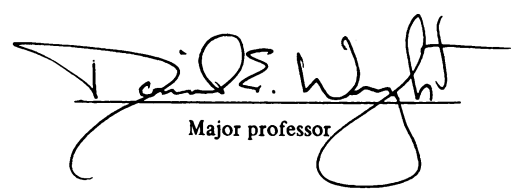

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THE JOY AND THUNDER DAYS:
MICHIGAN RAILROADS DURING THE TWENTIETH CENTURY
IN THE DAYS OF THE STEAM LOCOMOTIVE

By

David Dylan Jones

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ABSTRACT

THE JOY AND THUNDER DAYS:
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IN THE DAYS OF THE STEAM LOCOMOTIVE

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From 1900 to 1960, in the era of steam locomotive use, Michigan railroaders formed a unique subculture that grossly and subtly affected themselves and Michigan citizens, positively and negatively. Twenty railroaders interviewed recall at length consequences of their time--some of which were unforeseen. Steam railroading was a vulnerable industry with imperfect technological development. Many accidents occurred, caused in part by advancing technology. The period was unparalleled for the state, and will not return; as one interviewee commented, "The joy and thunder days are over now."

For TAMI

ACKNOWLEDGEMENTS

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INTRODUCTION

The evolving, expanding technology that railroads were for decades in Michigan had many consequences, some good, some bad, some unexpected. In Parts One and Two of Chapter One, I will outline and examine some of these consequences. I have laid out my analysis and findings like a balance sheet: positive effects appear first, then negative--"joy" and "thunder."

The particular decades considered here are from 1900 to 1960--the more modern of the 123 years that the steam locomotive operated in Michigan. The looming, dramatic steam locomotive that Michigan's many railroads used has been the subject of countless popular and technical articles. Not so appreciated--indeed, going to their graves by the scores without notice--have been the thousands of workers who tended, ran, managed, maintained, and kept in check these machines. Isolated interviews by journalists and railroad enthusiasts have caught only a fraction of the information which these people know. It is a blatant fact that one cannot understand even one steam locomotive as a unit of technology unless one grasps the service these workers provided, and the closely-knit community they were. Thus, Chapter Two will quote from oral history at length--some of these workers remembering, in certain cases back to the turn of the century, aspects of their community, which in fact comprised a subculture. They revive its way of life, its own tragedies and triumphs.

Theirs was a broad domain. Michigan railroads were once a sprawling, influential network. With over 6,600 miles of track in the Lower Peninsula alone--the area of my study--they reached and changed every county. The steam locomotive whistled through township after township

from 1837 until well into our century. It burned omnipresent wood, at first, and boiled common water, thus satisfying the first needs of a burgeoning technology that it be sustained by ordinary means. Developing greater and greater pressure, with stronger and stronger metals, steam locomotives evolved into huge machines, of many different wheel arrangements for yard or road duty--including some passenger pullers with wheels 77 inches in diameter--and were masters of almost any weather. As I will show, Michigan railroads touched Michigan like no technology before or since. Even before the tumultuous 20th Century, the railroads brought jobs, settlers, and trade to the state, carried off much of Michigan's natural resources, and held no little sway in the legislature. From 1900 to 1960, they further affected Michigan's economy, finances, and society, influenced recreation, education, and communications, and changed linguistics, politics and laws.

Part One of Chapter One will give some examples. During World War Two--when Michigan railroads had to move immense quantities of goods on very demanding schedules, despite manpower shortages--state railroaders and the steam locomotive reliably distributed war materiel, transported troops and prisoners, and tied together the "home front" with effective communications. Part Two of Chapter One, though only a sketch, gives due emphasis to this distinct time. And Part Three of Chapter One--the negative side of the balance sheet--will outline the continuous problems, hazards, and dangers that railroaders and the public faced because of the steam locomotive and its technological web. Many strange and sad consequences came about that no one could have foreseen in 1837--outcomes that even in the 20th Century could be unpleasantly surprising.

Chapter Two, by examples and photographs, will show how and why Michigan railroaders were unique. Oral histories will tell the way a railroad man dressed, spoke, worked, and guarded his status. In particular, this section portrays the flavor of railroad life, and how, above all else, the railroader had to be tough. Certain quotes may seem

quaint and odd. But if the reader will draw on Chapter One, and rely on my Glossary, Chapter Two will seem less distant. And the two chapters together may begin to offer ways to understand this most unusual period of Michigan's history: "the joy and thunder days."

CHAPTER ONE

RESULTS OF MICHIGAN RAILROADING, 1900-1960

CHAPTER 1: RESULTS OF MICHIGAN RAILROADING, 1900-1960

Part One: Peacetime Joy and Prosperity

1. Economics

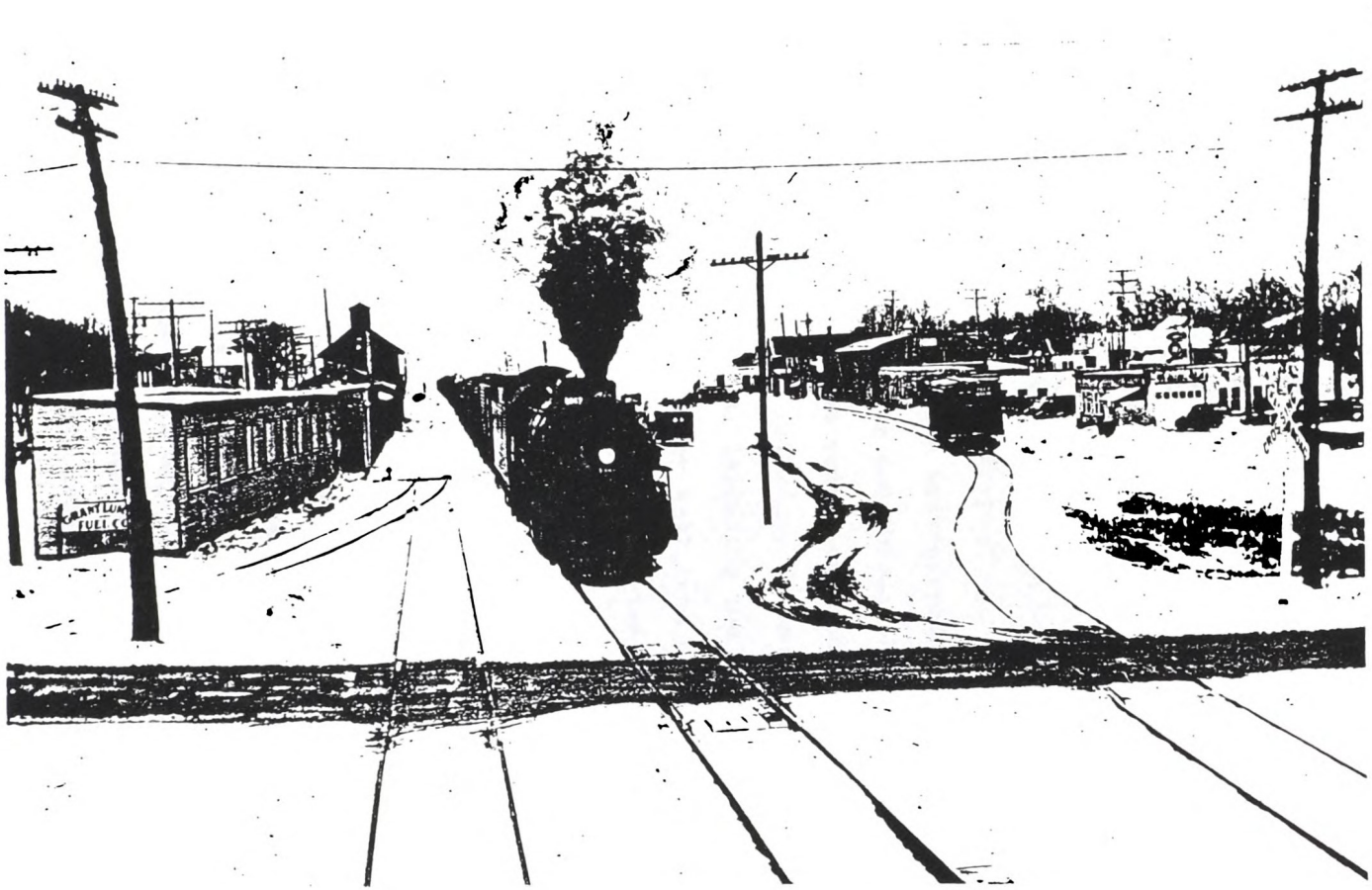
A. Industries and Coal Users

Steam locomotives working in Michigan for sixty years reached almost everywhere; the relationships between railroads and citizens were elaborate. The engines could be awesome performers. Run on good tracks, they could exceed 100 miles an hour.[1] Rapid schedules were therefore possible to set--and to keep. Railroads toted freight and passengers; transportation enriched the railroads. An example of this symbiosis appears in Figure 1.

Grant, Michigan, seen in February 1950, is bisected by a steam locomotive passing through with a freight train. The railroad is the long-time Pere Marquette, named after the Jesuit explorer Jacques Marquette, which has become the Chesapeake and Ohio, on its "North End" from Grand Rapids to Traverse City. At left, the Grant Lumber and Fuel Company sheds, their loading docks on the railroad's siding, wait for flatcars of lumber and gondolas of coal when the "local" train will stop in Grant, as engine #1067 here will not. Area builders, and area residents who burn coal in stoves and furnaces, value that "local," which will also haul out from the siding at the right that refrigerated boxcar--possibly packed with area fruit. Unseen in this--over the photographer's left shoulder--is the Grant Elevator Company, another stop for the "local"--and a vastly important one for area farmers. Engine #1067 will leave all this behind rapidly and move onward through several other such communities--each similarly linked to the railroad.

Notable by its absence is effective line protection, physical barriers between these tons of rushing train and anyone line-side. There are no fences, no crossing flashers or bells, no gates to drop in

Figure 1: Grant, Michigan, February, 1950 (Leisgang/C&OHS)

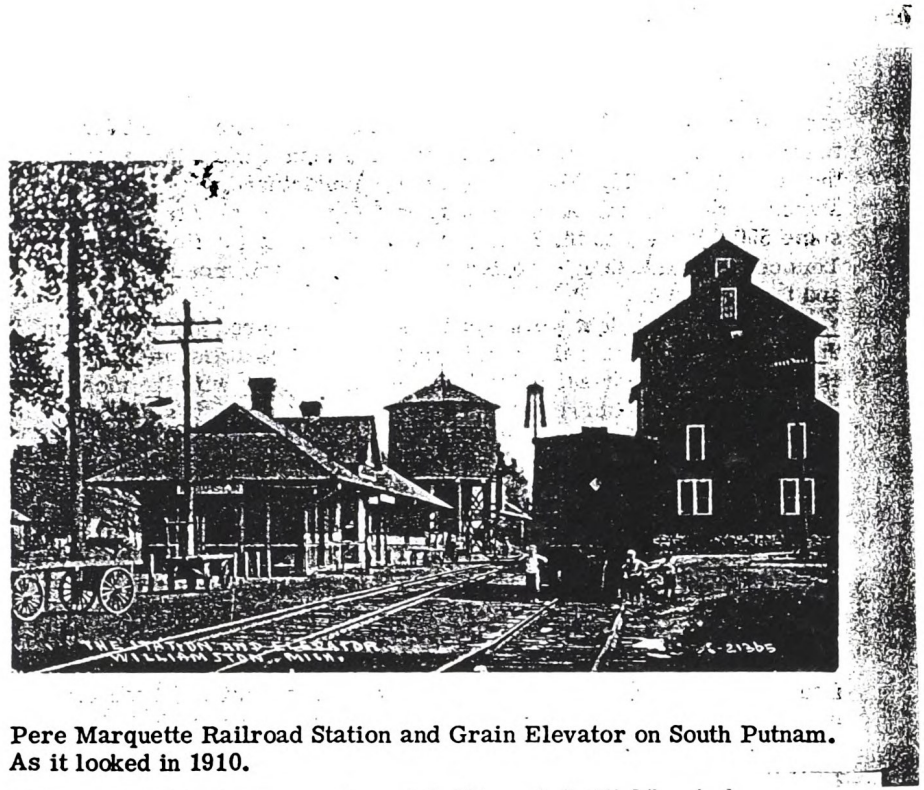


place, and only the minimum "crossbuck" sign of "Rail/Crossing/Road." Even given the year of 1950, this indicates an American philosophy: on almost every line in Michigan, and virtually all across the nation, the track is open to trespassers, livestock, vehicles, and vandals. This habit of poor line protection runs counter to the original, British plan of strictly protected rights-of-way and uniformly guarded grade crossings at roads. Decades of injuries and deaths have resulted. Moreover, in Michigan, farmers whose cows were struck by trains fought a civil insurrection in the 19th Century, trying to win compensation from the Michigan Central.[2] In World War Two, fearing sabotage, Michigan lines put a guard on every significant railroad bridge in the state, and had strict security measures at all shops.[3,4]

Equally significant, though underplayed in this photograph, is the railroad's competition: trucks and automobiles. The muddy road across the foreground already carries customers to the Grant Lumber and Fuel Company, and in time will be roiled by lumber trucks. Vehicles rest here and there in the picture, including one at the depot (just past #1067). Indeed, Michigan highway M-37 runs north and south just beyond the row of businesses on the right. In time, "the road" will kill this train, and many others.

Forty years earlier, but on the same Pere Marquette, another scene is revealing. Figure 2 lacks only an arriving train to be stereotypical. Economic inter-relationships and interconnections are plain here in Williamston, among all the photogenic features: the depot with three carts ready for incoming baggage and trunks; the stationmaster at ease in shirt-sleeves, away for a time from his telegraph; the grain elevator encroaching on the siding; the fat water tower sweating by the freight house; and three small boys posing akimbo by the end of a boxcar. Past the elevator, invisible to the photographer, a yard on yet another siding has tons of soft coal beside it. Grain--coal--

Figure 2: Williamston, Michigan, 1910 (Merrifield and Howarth)



Pere Marquette Railroad Station and Grain Elevator on South Putnam. As it looked in 1910.

passengers--freight--and probably express business--definitely, Williamston and Pere Marquette were working together this fine day in 1910.

Two implications of this photograph are worth noting. The photographer was attracted not only by the quaint scenery but by the steam locomotive--not visible here, but suggested by the engineman under the dropped spout on the water tower and betrayed by the steam at the rear of the picture. The steam locomotive guzzled water, often had to "stop to feed itself at tanks," in Emily Dickinson's phrase.[5] Williamston was therefore a regular water stop for Pere Marquette engines--a "jerk-water town" in railroad slang. It may also have been a refueling stop once, where two-foot billets of local lumber, stacked in a woodlot, were pitched into the tiny bunkers of wood-burning engines.[6] Engines took on wood in as little as one-half-cord lots.[7] The implications are these: 1) that such inefficient small locomotives stopped at dozens of such "Williamstons," helping to denude the landscape, and 2) that because of locomotive lifetimes lasting 40 or more years, well into the 20th Century the railroads were hampered by scores of such "hayburners." These little engines demanded more crewmen, more supplies, and more maintenance as part of the railroads' "over-expanded and obsolescent plant."[8]

Interdependencies, however, went far beyond the rural level, where seasonal business predominated. The case of coal is an excellent example of volume business that steadily affected masses of Michigan's population. Lower Michigan, the state's population center, burnt much coal annually for building heat, steam generation, and electric power. Native Michigan coal was sparse and poor; the railroads thus hauled in many tons from Appalachian mines. Huge concerns, including municipalities, industries, and utilities had "black snakes," trains of nothing but coal cars, supply them. At Marysville, the Detroit Edison power plant relied on Pere-Marquette-borne coal.[9] At East Lansing, the Pere Marquette periodically dropped off at Michigan State University gondolas

full of coal--a practice dating from 1889.[10] At Lansing, the city Board of Water and Light took in New York Central coal from 1940 onwards at its Ottawa Street Plant. Also in Lansing, the Grand Trunk Western fed coal to the Oldsmobile Plant of General Motors Corporation (G.M.C.). In Flint, a group of G.M.C. units received coal by rail: the Turnstead, Fisher Body, A.C. Spark Plug, Truck and Bus Assembly, and Buick Plants.[11] And at Midland, coal by the trainload disappeared into the boilers and furnaces of Dow Chemical Company; "2,226 cars of coal and coke" in 1944.[12]

Another, subtler interdependency went on. The railroads burnt much coal themselves in locomotives, Great Lakes car ferries, and buildings. Locomotive and car ferry coal use was obvious, but building consumption is little recognized. Considerable space in uninsulated, or poorly insulated, physical plants had to be heated yearly. Some statistics suggest the situation:

Table 1: Pere Marquette Depot Cubic Footage[13]

Place	Construction	Total Cubic Feet
St. Louis	Tile and Stucco	40,550
Belding	Brick	61,600
Bangor	Brick	106,697
Holland	Brick	116,700
Grand Haven	Brick	121,659
Traverse City	Brick	186,454

And at the Union Product Depot in Detroit, partly owned by the Pere Marquette, cubic footage ran to 3,706,192.[14] Thus the railroads were consumers as well as carriers of coal. Because they could be stymied by shortfalls of it, they created many local landmarks--high coal piles, such as at Baldwin--to ride out delays or coal miners' strikes.[15]

B. Agriculture

Cleaner commodities than coal prevailed in rural Michigan. In season, crates of baby chicks--at one time, 300,000 animals a day--left Zeeland.[16] Carloads of cherries and other fruit left Michigan canneries,

like the one at Suttons Bay. Dozens of other products departed, via the "local"--a purely freight train--or on a "mixed"--on a freight-and-passenger train. Churns of milk often rode with the expressman in a baggage car, lending his route the nickname of "milk run." Farm goods reached market reliably, some even to the Union Depot in Detroit. What was less reliable--lacked any tariff, in fact--but nonetheless blessed growers year after year, was the arrival of hoboes atop, in, and under freight trains to harvest Michigan crops, notably fruit.

C. Hoboes

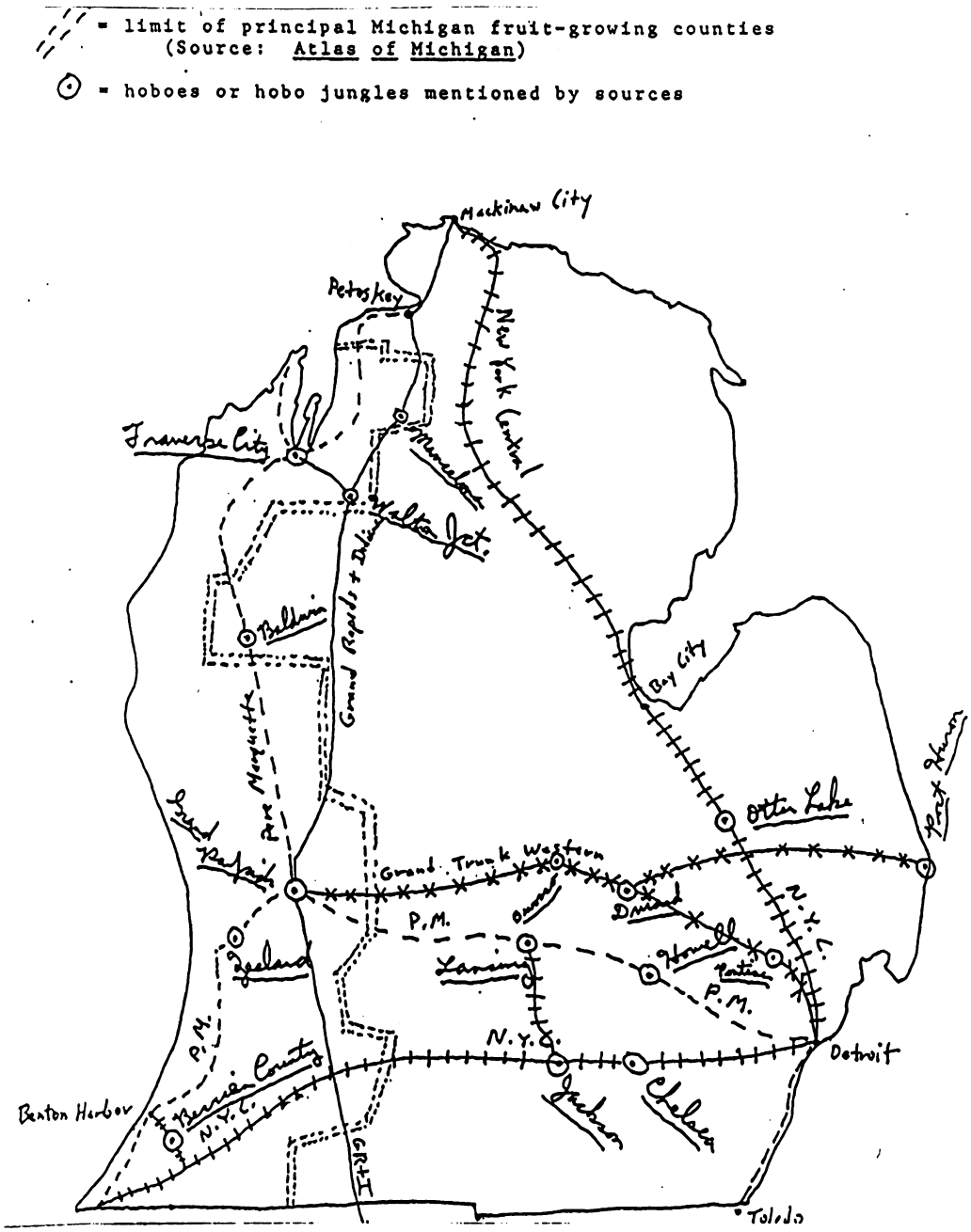
Figure 3 suggests hobo habits. All the railroads shown lead west or north to the great Michigan fruit-growing counties at the western edge of the Lower Peninsula. Here, on sandy soils, amid Lake Michigan temperateness, fruits abound.[17] The growing season begins at the Indiana border in early spring, ending around Grand Traverse Bay in fall. Millions of sweet cherries, tart cherries, apples, peaches, plums, and pears weigh down their trees. Fruit without pickers rots by the ton. Farmers in this fruit belt sought hoboes as pickers. They worked for little--and were many. Michigan saw at least 1,704 of them.[18] Jessie Fox remembered some of these "knights of the road" at Port Huron, ca. 1910:

> Every spring--or in the fall, let's say--they would come in to the depot, to the office, and a lot of them were well-educated men. <u>They</u> were not bums to begin with. And the (railroad) men wouldn't give them money, because they knew if they did, they'd drink . . . they'd let these hoboes sleep on the Tappan (Junction tower) floor . . . then they would leave in the spring, and stay up north, where the weather was good. . . .[19]

Figure 4 shows "fruit tramps," hoboes out of work after picking fruit, in Berrien County while "the weather was good." Fox continued:

> But then in the fall they'd be back. They were headed for Florida . . . this was a twice-a-year occurrence, years and years. Did you ever see them cooking out as you went riding on a train? . . . you'd see maybe three of them. They'd have a pot . . . cooking out. . . .[20]

Figure 3: Random Sampling of Michigan Hoboes (Author)



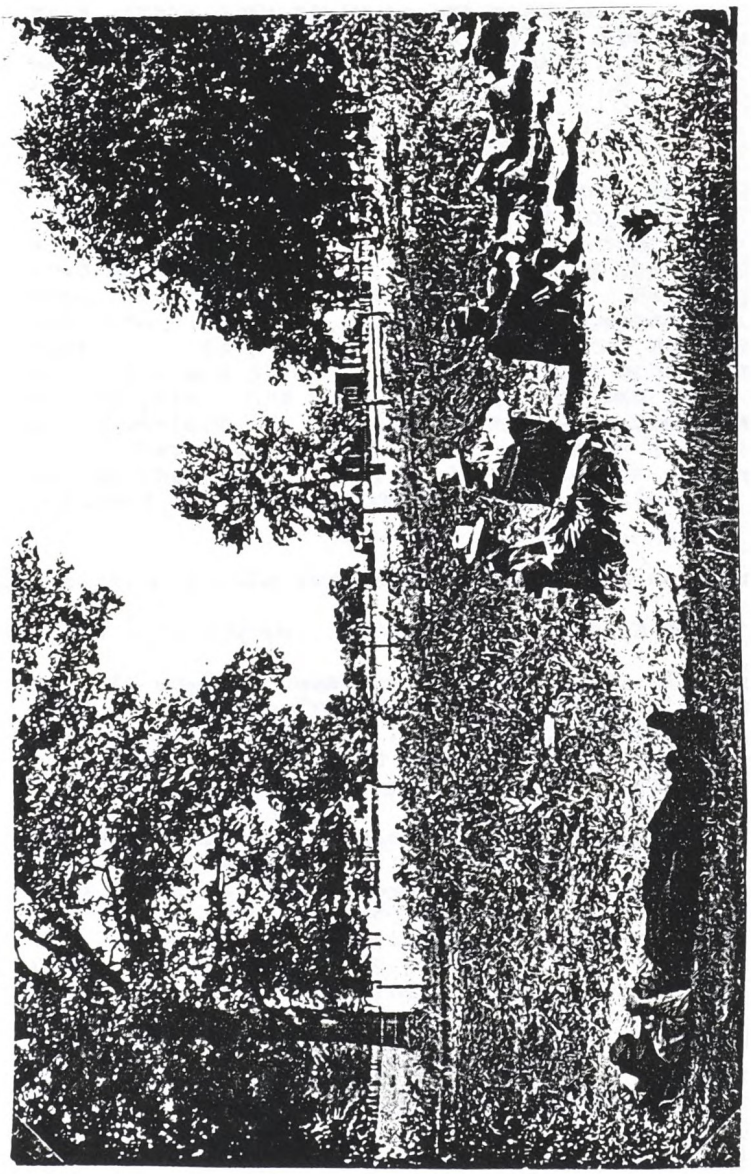


Figure 4: "Fruit Tramps," Berrien County, Michigan, 1940 (Allsop)

Leah Cannehl recalled hoboes in a typical way:

> I lived in Chelsea . . . we children would be out in the back yard. We'd see these men coming across the train, it'd be slowing down, and they'd get off the train. Many times they would come to the house for food . . .my mother never turned them away. If it wasn't any more than maybe a cup of tea and some bread, or something, but she never turned one away. And there was always a lot of them . . . when that train'd start moving, they'd start scurrying back across this little open field to get back on . . . we found that they would make a mark on the sidewalk in the front of the house (that was visible) when they would come along. . . .[21]

Henry Truer, Jr., had a different memory:

> We used to see them . . . in the (Grand Rapids) yards . . . I was told this, and I don't know who much truth it is--but, security, the railroad dicks came on at four o'clock in the afternoon, (when) they (did) a yard check. Say they beat the tar out of a hobo, a couple weeks before . . . they would find three stones stacked up on one end of the yard, and on the other end of the yard. And they knew somebody was going to be waylaid . . . because they were after him . . . that was the symbol . . . if they killed one of the hoboes, they could figure one of the railroad dicks was going to get in problems. . . .[22]

Russell Harrison of the Pere Marquette was one such railroad policeman to deal with hoboes. They did not scare him:

> We used to have hundreds of riders (in the 1930's)--bums on freight trains. Especially in the early fall (sic) . . . unemployed Detroit and Toledo all going to Traverse City to pick cherries . . . with so many riding, it was impossible to handle it. There'd be jungles all along the track. We had a jungle (by) Ensel Yard (in Lansing) . . . there'd be all the way from twenty to sixty bums there at a time. They'd have their cookouts.
>
> I got orders one time to break this jungle up . . . (it was) right at one side of the yard . . . between Logan Street and Turner (Street), on the south side, where Spikes Alley comes in . . . I went down there one evening and asked all these fellows--there must've been thirty-five there at the time--if they were almost through eating their Mulligan stew and so forth . . .
>
> One says, "Yes. Why?"
>
> "Because I'm going to break the jungle up."
>
> "Well?" he says.
>
> "That's right. Finish--eating--and clear out, or downtown (the Lansing jail) you go.'

> So they abide by what I said . . . I went back when they were through eating. I stacked all their utensils--frying pans, cups, plates, anything they used--I stacked them in four piles . . . about three feet high (each) . . . I took my .38 out and shot down two bullets through each pile . . . so they wouldn't have any utensils . . . so they wouldn't come back. . . .[23]

Hoboes in Michigan ebbed and flowed to and from orchards "in an overall system that no one publicly acknowledge(d)," spending their wages freely, needing no payroll deductions or pensions, so that "orchard owners, the (hoboes) and the local economies (were) all (satisfied)."[24] The hobo life seemed glamorous to many--the happy "rover"--except that:

> . . . the emotional tone of the jungle was laced with glib cynicism, persecution feelings, self-adulation for having seceded from society. Think of it as a blend of the age-old gypsy's Ishmaelitism with the copping-out of the hippie of the 1960's--only messily warped by lack of women.[25]

D. Bulk Commodities

But hoboes by picking fruit gave back to the railroads some of the business they extracted by "pilferage, damage to rolling stock and attacks on employees."[26] Tremendous "fruit rushes"--express shipments of fruit by the trainload, via what were dubbed "banana trains"--took precedence over all other trains in their season. Other farm products left the state by the carload. Onions from Potterville filled refrigerated boxcars.[27] Beans by the ton left the Thumb. Fertilizer to keep the process going entered Michigan by rail as well, including cow dung and pig manure in gondola-lots from the Chicago stockyards.[28] And piggeries, such as the one at White Cloud, got gondolas full of city garbage for cheap swill.[29]

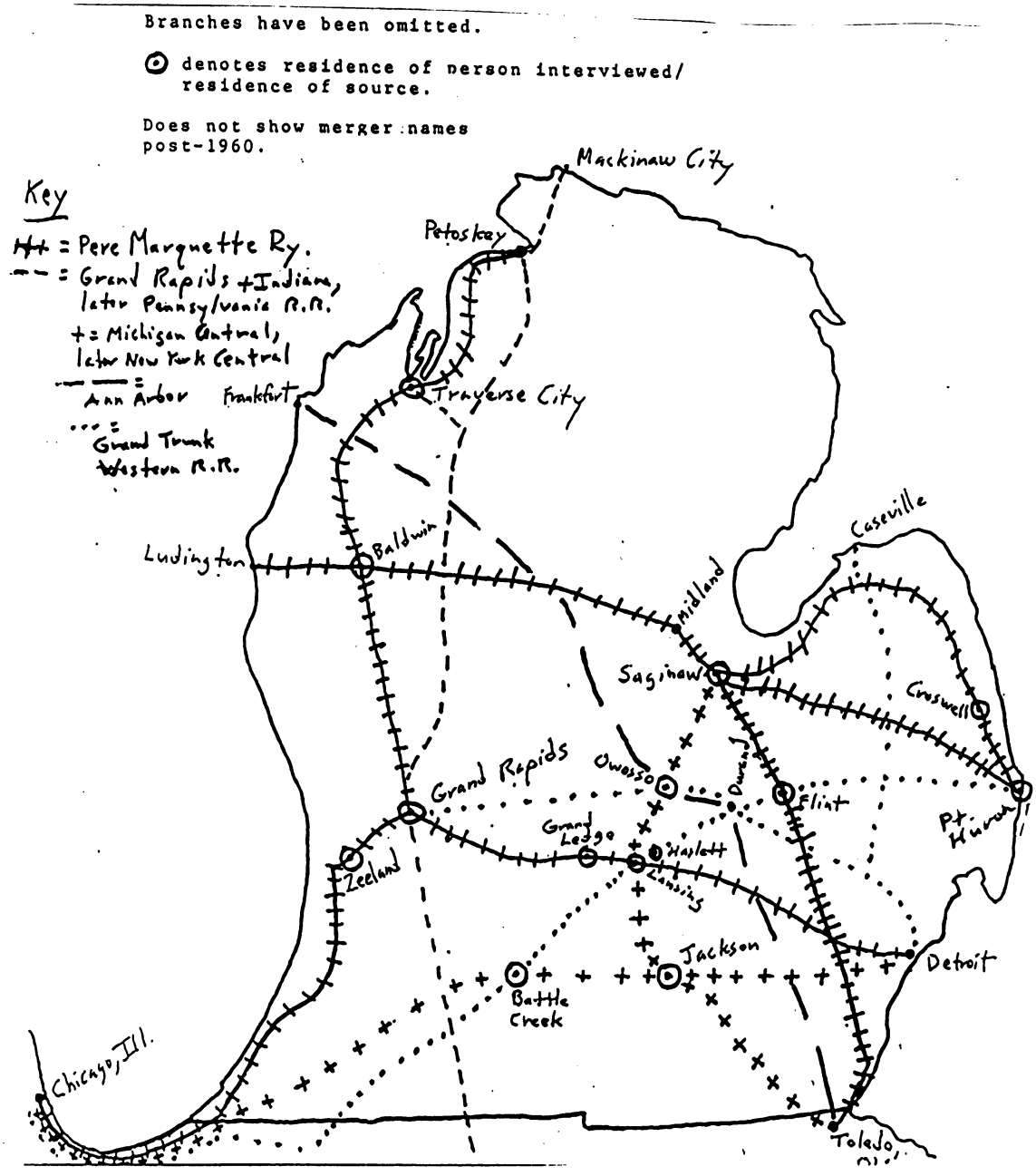
Michigan's railroad-hauled bulk commodities had influence far beyond the state. The Ludington and Northern, a short-line railroad, existed primarily to move dune sand on its first step to the Ford Motor Company glassworks in Toledo, Ohio. Ford made all its automobile glass

from Michigan sand. Also, huge amounts of chemicals left Midland annually from the Dow Chemical Company. Dow's own fleet of tank cars traveled on the Pere Marquette to as far away as Texas.[30,31] Indeed, the Dow-Pere Marquette relationship was symbiotic, dating from 1900 when Herbert Dow had "a small shack" beside the railroad.[32,33] The Dow plant in Midland in 1945 had 16 miles of railroad as its spine.[34]

2. Finances

Both Peninsulas of Michigan had surprising mileage: 6,640 miles of track in 1960, many years after the peak of Michigan railroads, and no less than 7,946 miles in 1900.[35] Figure 5 shows the principal Lower Peninsula railroads. The lines sprawl, with concentrations on the down-state urban areas. With this broad network came broad financial benefits. Those Lower Peninsula companies paid $7,886,894.22 in ad valorem taxes in 1924 on their 6,393.70 miles of track, chiefly to support what was still called "the little red school house on the hill."[36,37] In some counties, the railroad or railroads was or were the second-highest taxpayer, after the citizenry.[38] An historian remarked in 1924 that Michigan railroads were "(the) actual though indirect repository of the accumulated savings of a large proportion of our people (through pension funds)."[39] Meanwhile, railroad payrolls boosted local economies. At one place alone, the Pere Marquette Mechanical Department employed 887 people at the Wyoming Shops in 1945.[40] The Pere Marquette had, at various times, large or small shops in Ionia, Traverse City, Saginaw, Plymouth, and Port Huron. In each place, as well as all the spots train crews would stop for lunch, local "beaneries" and businesses gained local trade.

Figure 5: Principal Lower Peninsula Railroads (Rand McNalley)



3. Society

A. Communications

Payrolls, letters, packages, bills, junk mail, and much else moved around Michigan in stout Railway Post Office (R.P.O.) cars. Figure 6 indicates the connections of these cars on one railroad. Each Grand Trunk Western R.P.O. was 85 feet long, 10 feet broad, 8 feet high, and could safely hold 80,000 pounds of mail at 85 miles an hour--a speed which was not rare on the Grand Trunk Western.[41] Mail was snatched aboard an R.P.O. at places too small to merit a stop. A canvas bag hung some 7 feet 3 inches off the ground on a trackside crane held the mail.[42] A clerk aboard the R.P.O. swung a mounted hook out to grab the bag. Dumped onto tables in the center of the R.P.O., the mail was quickly sorted into pigeonholes, canceled with an "R.P.O." mark, rebagged, then tossed out to small towns passed at speed, or toted off at journey's end.[43] A letter could and did go from Michigan to California in two and one-half days--when handed on to a Santa Fe R.P.O. at Chicago.

Security on these mail cars was tight. End doors were oak, barred and chained shut when the R.P.O. moved. Windows were shatterproof glass, and wooden bars covered them on the inside. Each car had sides of bulletproof oak and steel, and the clerks carried .45-caliber revolvers. Payrolls were usually in cash--a tempting target.[44] R.P.O. cars were strong in memory of Jesse James and such robbers. They carried the mail well, lasting from Lincoln's presidency until Nixon's, and hauled much mail from city center to city center. "More than 90 percent of first class mail," a 1953 estimate ran, "is transported by rail in intercity traffic."[45]

B. Telegraphy

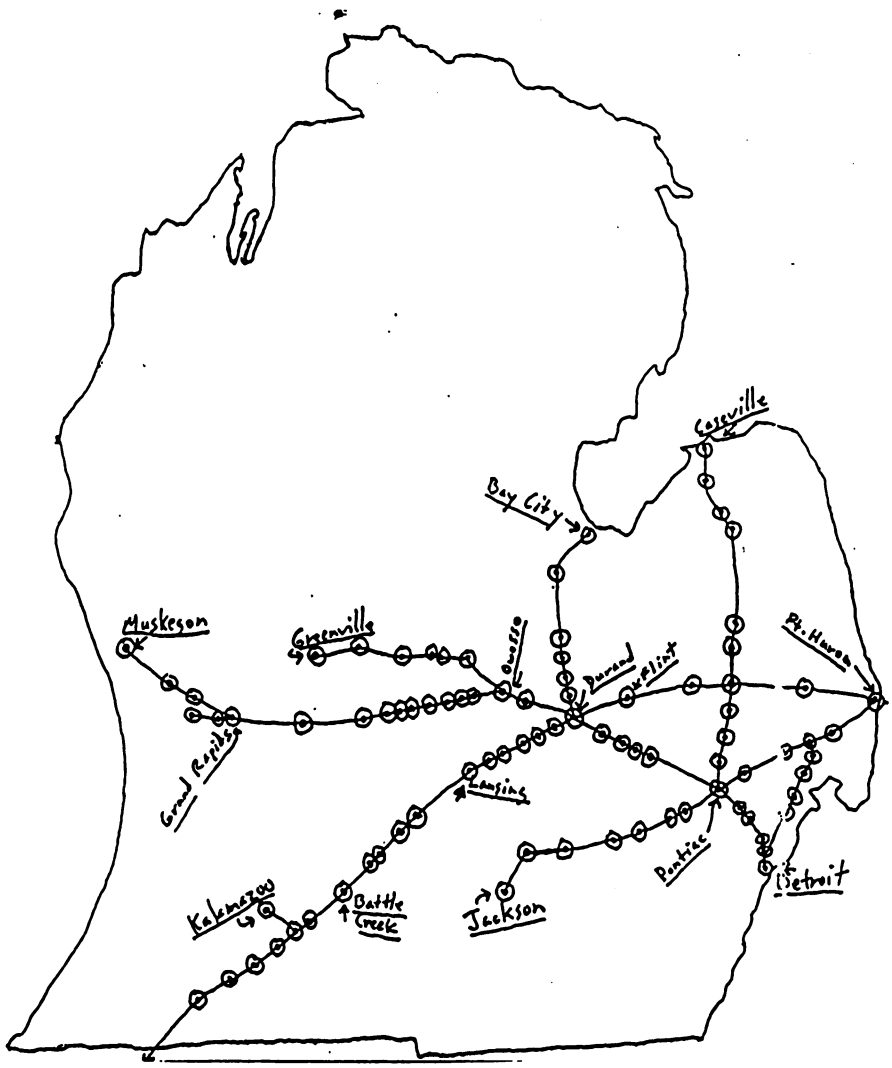
Movements of trains containing R.P.O. cars--or anything else coupled behind a steam locomotive--obeyed orders issued over a railroad's own telegraph system. Copper wires dipped along from green

Figure 6: Railway Post Office Communities, Grand Trunk Western R.R. (Rand McNally)

Mail could be received or disbursed at each place.

Several Detroit-area communities have been omitted, for lack of space.

⊙ denotes a community.



insulator to green insulator for miles along the ditches. Telegraph poles were so regular that you could time a train's speed by counting them and eyeing your watch. The Grand Trunk Western, despite encroachments by the telephone, still had 212 Michigan telegraphers in 1941.[46] Most famous, of course, from the Grand Trunk (albeit before our period) was Thomas Edison, who went on to bigger things.[47] But dozens of other boys became enthralled by "lightning-slinging," the art of the telegraph key.[48] This means of communication was "especially welcome in cases of emergency . . . (and) there was always a telegrapher" at a depot, where "the sound of the dot and the dash was attractive."[49] In Flushing, one local lad served the Cincinnati, Saginaw and Mackinaw. In 1918 it:

> . . . was the very highest peak of the CS&M . . . It was still wartime and the trains literally clogged the tracks for twenty-four hours a day. Even after the Armistice was signed that November there seemed to be no appreciable slacking off. That summer and fall and winter Percy Benjamin was still working at the depot . . . (he) was in his middle thirties . . . he had a sure hand and often sent messages so fast that the chief dispatcher, who was no slouch himself, had to ask him to slow down. . . .[50]

At Flushing, Williamston, and so on, before telephones were common, the telegraph brought in the outside world:

> The wires were the source of almost all the news. Over them came the first tidings of the San Francisco earthquake, the sinking of the Titanic, Willard's victory over Jack Johnson, and the daily baseball scores . . . the clicking of the telegraph key never ceased. . . .[51]

C. Wintertime Necessity

And, clattering away, the telegraph would summon snowplows and shovelers to level Michigan drifts. Winters in the Lower Peninsula could be severe enough to stop even steam locomotives. Figure 7 shows how snow has stalled two Grand Trunk engines near Flushing on February 22, 1912. The engineer in the first locomotive, leaning out of his cab into a drift, the diggers looking bashful, the small boys gawking at the photographer, and the dog leaving the picture at the lower right won't

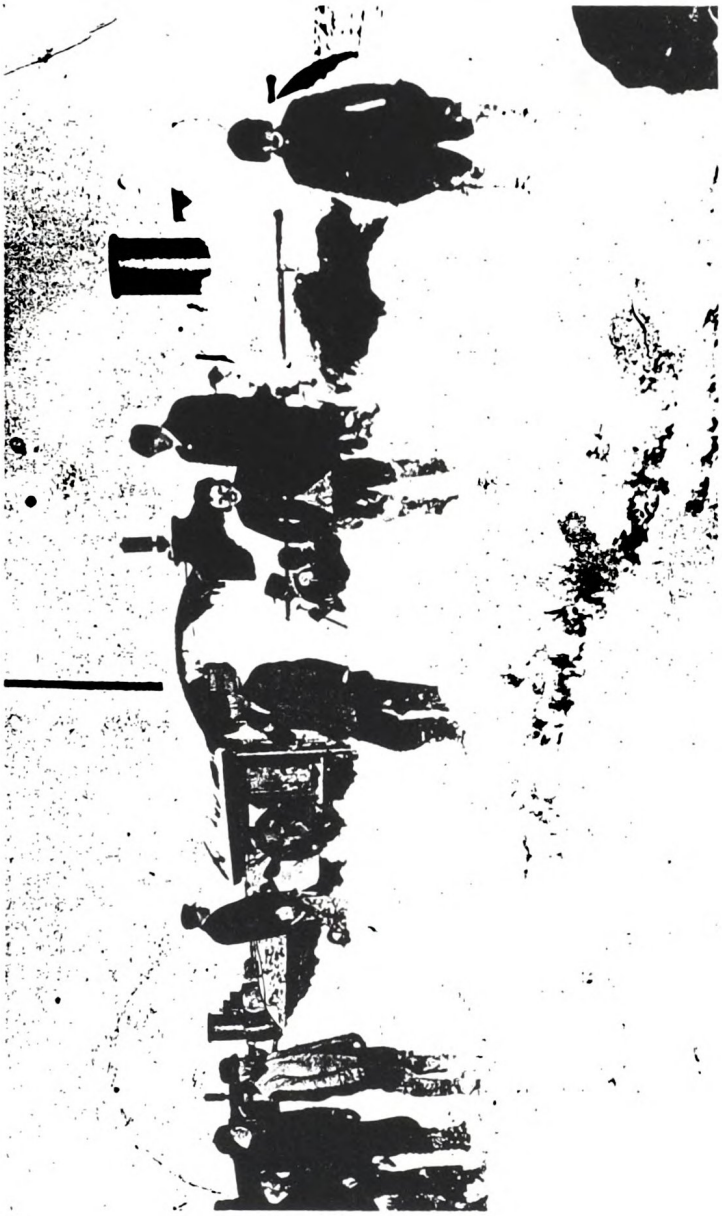


Figure 7: Near Flushing, Michigan, February 22, 1912 (Author's collection)

be still a moment more than necessary. Almost out of sight, still smothered, is the second engine. This view is a postcard one, and its message, dated March 8, 1912, reads in part: "Dear Coz. Here is one of our views after the storm. Do you wonder that we are just getting mail that we should have had a week before? . . .[52] Until the railroad opened the way to the outside world again, Flushing and scores of communities were snowbound. As Clarence Vicent (born in 1925) recalled, in Baldwin:

> . . . sometimes the snow would be as tall as this (gestures seven feet high) back when I was a kid . . . more than that, if the wind blew it hard . . . they used to take old boxcars, set them up for a snow fence . . . one time, we had a week before we could get any trains through, steam engines, powerful things, they couldn't get through from Grand Rapids up to Traverse City for about a week . . . this was about '29, through the '30's--'37 was a real bad year . . . we couldn't even get automobiles into Peacock for about a week, too. . . .[53]

Pere Marquette engineer Clarence Gangluff remembered tactics his railroad tried with a snowplow in the Thumb:

> About 1913, the west end (Saginaw to Ludington) was plugged up pretty bad, but the Port Huron Division, that was closed right out. It was four or five days they couldn't get into Harbor Beach . . . that little snowplow, we took it back down to Ponds and got some concrete blocks and they filled that up with them. The gangway, and everything else they could, to (get) that snow plowed. She just go into that, and roop! Well, she stopped almost standing up straight. Pretty near a week for snow to get (out of) there. . . .[54]

On another occasion, which Gangluff was reticent to describe, he himself buried a snowplow in a drift at Kinde, and had to get the town to dig it out.[55] Snows could indeed be high. But sooner or later the railroads beat them.

Two implications emerge from all these "snow stories" and from remarks by other railroaders: 1) that winters in the Lower Peninsula reputedly used to be more severe than they are now, and 2) that certain parts of the Lower Peninsula are "snow belts." Areas downwind of the Gary, Indiana, steel plants, and sections of the Thumb are often

mentioned. This in turn suggests consequences of technology not perhaps foreseen: not only weather changes, but pollution belts downwind of such complexes as Gary. From smokestack after smokestack of locomotives, as well, soot, sulphur dioxide, and carbon monoxide churned forth. Smoke ordinances in cities tried to regulate (or fine) such railroad smog, but were not universally successful. In at least one case, "the smoke inspectors were paid off."[56] And, as will be seen later, steam locomotive exhaust could kill.

4. Recreation

A. "Resort Specials"

Every season saw special trains bearing travelers north in Michigan for "re-creation." The Pere Marquette's "Resort Special" ran to the northern end of the railroad, "the Baptist show place, Bay View, near Petoskey."[57] Starting in Chicago, beginning shortly after World War One, it added riders at Grand Rapids from Toledo and Detroit, then barreled on 247.9 miles to Bay View[58,59,60] Willis Dunbar as a child saw it "whiz through" Hartford, Michigan, "late in the evening," to arrive at Bay View via Traverse City and Charlevoix "early the next morning."[61] Grindstone City and Pointe Aux Barques were two other Pere Marquette tourist destinations.[62] By 1903, the Grand Rapids and Indiana had organized a "Northland Limited" which attracted riders from Louisville, Kentucky, St. Louis, Missouri, Cincinnati, and points closer. Cincinnati passengers could board there at 7 p.m. and reach Mackinaw City the following morning with others from Louisville, St. Louis, Ft. Wayne, Indiana, and other cities.[63] Such resort specials persisted on the Pere Marquette, the Grand Rapids and Indiana, and the Michigan Central "into the 1950's."[64]

To entice riders, Michigan lines created fancy brochures--with slightly presumptuous titles:

> A few facts about a pleasant place . . . to provide . . . an ideal summer home . . . in the heart of the wildwoods of Michigan (Ann Arbor R.R., in 1901);[65]
>
> Grand Rapids and Indiana Railway, the Fishing Line (1902, complete with a picture of a leaping trout;[66]
>
> Quiet summer retreats along the Lake Shore and Michigan Southern Railway (1903);[67]
>
> A little corner of God's country (Manistee and Northeastern Ry., 1908);[68]
>
> Mackinac Island (and) Michigan resorts (Michigan Central R.R., 1901?);[69]
>
> Hunting and Fishing, inexpensive outings, and vacations on the popular and picturesque Detroit and Mackinac Railway (1909);[70]
>
> Michigan summer resorts, a guide to the summering places in the lake and river regions of the state of Michigan, together with a list of hotels and boarding houses (and) their rates, fishing and hunting lodges, and the laws respecting fishing and hunting, etc. . . . (Pere Marquette Ry., 1917).[71]

Manus manum lavat. Mackinac Island's Grand Hotel, a destination for the well-to-do, was a joint venture built in part with Michigan Central and Grand Rapids and Indiana money.[72] At Charlevoix, the Pere Marquette "apparently owned 'The Inn' there," billing it as "the finest Summer Hotel in the resort country."[73]

B. Local Trade

Tourists arriving by train were most welcome in communities whose economies had little other steady income. According to one theory, the "turn-over effect," a dollar spent by a tourist would circulate seven times among local merchants before coming to rest in a bank.[74] That tourist and his family might well spend money not only for lodging and food but also purchase expendables like guide services, film, souvenirs, entertainment, laundry use, and to a limited extent patronize fixed services like hardwares, bookstores, hospitals, and undertakers. Tourist volume could be a surge. The Michigan Central dining hall at Mackinaw City served breakfasts to 800 travelers some busy mornings.[75] Tourism was all the more welcome in northern Lower Michigan (and the Upper Peninsula) because when cold weather came, and schools re-opened,

the tourists went home, the meager agriculture and scarce industry of the region had to suffice, and they did not suffice any too well.[76]

C. Sports, and Other, Specials

Other forms of recreation and sport gave rise, on a spot basis, to special trains. Russell Harrison recalled Pere Marquette baseball, basketball, and football trips from Michigan State University to the University of Michigan in the 1940's. Certain football trips had "as high as 18 coaches . . . (with) up to 80 people a coach."[77] Grand Rapids sports fans came to Lansing, Lansing ones to Detroit. A passenger a little in his cups estimated the 90-minute trip from Lansing to Detroit--at 60 m.p.h.--took "four beers."[78]

Meanwhile, circus trains invaded Michigan periodically with performers, animals, and crew. Keith Bartow visited one such train in Lansing, and remembered that roustabouts sleeping in the train's bunks "always had to take the upper" one--"they smelled so bad; the stink rose."[79] Those bunks may not have been so good anyway. A claim agent in 1906 snapped:

> We all have no end of trouble with circuses and theatrical troupes traveling in their own cars, many of which ought to be in the scrap heap. These cars should never be accepted, no matter who is in them or what notice you may have received about the runs to be made with them, unless (everything) connected with them (is) in good repair . . . when you do take them, handle them as carefully as if they contained dynamite, and get them off the line without accident. . . .[80]

This warning was not hollow. The Wallace Brothers Circus train came to pieces in an air-brake failure at Durand in 1903.[81]

5. Linguistics and Literature

Circuses abounded in colorful dress and speech. But railroads had their own allure, including words now part of common speech and unrecognized for their roots. "Highball," originally a metal globe hoisted

high on a rope to tell an engineer to proceed--"to highball" was the verb derived from this signal--now is a kind of cocktail, where ice floats high, like the globe could. To "side-track" someone, deprioritize something (like a train), is in common parlance. And "washout," railroading's term and gesture for "Stop!," now means any failure--and is an official's gesture in football.[82]

Michigan railroads have also inspired literature. Ernest Hemingway, who traveled the Grand Rapids and Indiana, set his short story "The Battler" on it, between Walton Junction and Mancelona. Quite realistically for the locale, the story deals with hoboes.[83] Not far away, Bruce Catton's memoirs, Waiting for the Morning Train, describe the Ann Arbor at Beulah; "the train . . . came along the lake shore . . . and (swung) up to the platform, smoking and hissing and clanking, with the locomotive putting on its characteristic act of looking and sounding . . . alive."[84] Catton scores the "slightly seedy Pere Marquette," too.[85] And Edmund G. Love's autobiographical The Situation in Flushing revolves around his love at Flushing for the Cincinnati, Saginaw, and Mackinaw.[86]

6. Higher Education

A. Recruiting Trains

Not only literature but also higher education gained from railroad associations. "Recruitment Specials" on the Pere Marquette and the Grand Trunk Western brought prospective students--and their parents--to Michigan Agricultural College, through the undeveloped fields of south campus to, and across, the angled bridge across the Red Cedar River, where the Old College Spur they were riding dead-ended beside the powerhouse, a short stroll away from central campus. The long dresses, fine bonnets, and boaters of the crowds show up vividly against the old Pere Marquette clerestory coaches in period photographs. And the visitors were most welcome, for M.A.C. was not yet the giant it would

become as Michigan State University, and the college was eager for more students.[87]

B. Exhibit Specials

Michigan State College, the successor to M.A.C., was more outgoing. In September, 1929, its Purebred Dairy Sires Train traversed the Lower Peninsula on the New York Central. Figure 8 shows the Sires Train and its odd mix of coaches and freight cars. Behind engine #8455 rode a cattle car, containing a first-class dairy cow. After the next two cars--coaches full of exhibits--a flatcar was coupled on. At each stop, as farmers congregated, the cow was urged onto the flatcar and there milked, to display her productivity. Six coaches after the flatcar held more exhibits. The whole enterprise was the brainchild of the M.S.C. Cooperative Extensive Service.

Quite explicit. What is implied by the Sires Train is that in 1929, Michigan's population was still sufficiently agricultural to be reached in large numbers by such a train. The corollary is that the settlement pattern of southern Lower Michigan followed the tracks to the extent that a century after statehood enough farmers still worked the land close enough to the rails to take an interest in M.S.C.'s Sires Train. (The effects of the Great Depression had not yet arrived here.)

A "Soil Train" likewise operated by the Extension Service earlier, on the Michigan Central, carried exhibits and a rolling laboratory, preaching soil conservation. Two other railroad connections touched the institution at East Lansing. In 1942, M.S.C. Reserve Officer Training Corps cadets left for war on Pere Marquette coaches waiting on the Old College Spur.[88] And, in 1926, M.S.C. students used the Spur irregularly--students like to be unconventional--hiding beside it as a place to "spoon" in private, until interrupted by a steam locomotive.[89]

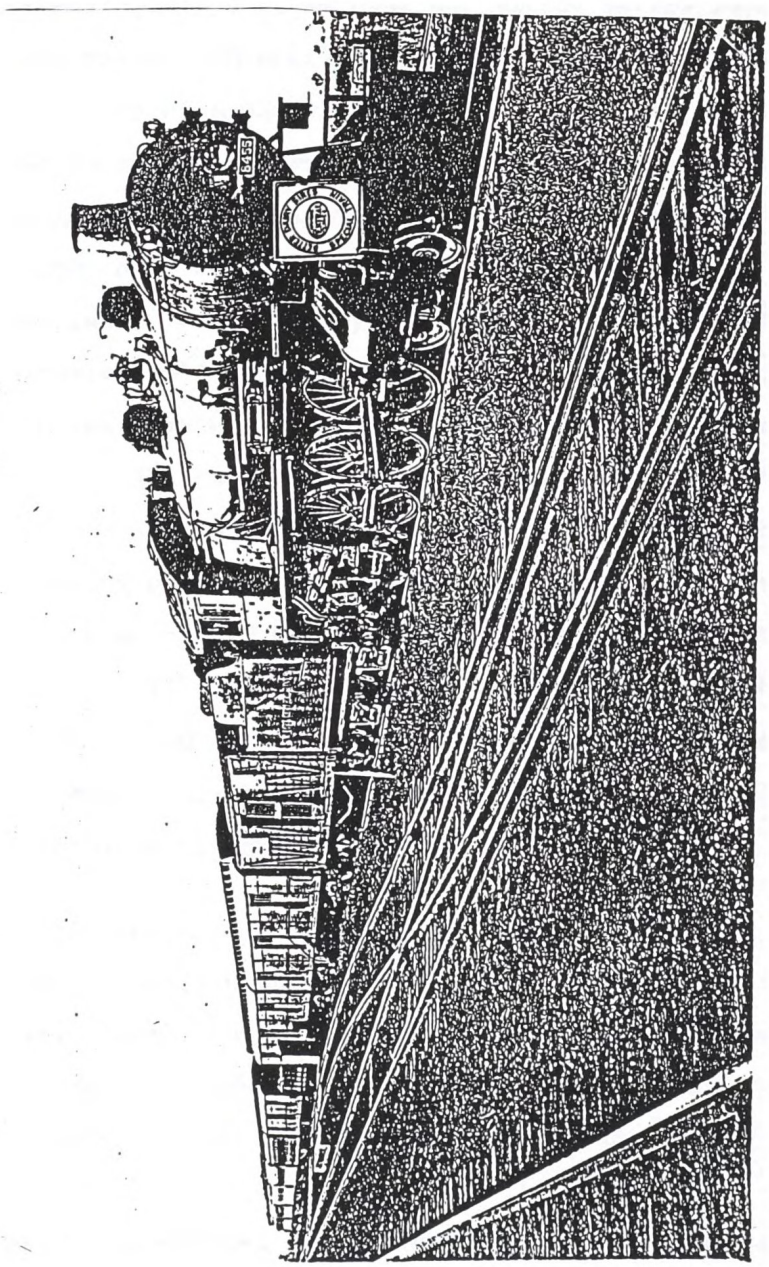


Figure 8: Better Dairy Sires Train, September, 1919 (MSU Archives)

7. Politics and Law

A. "Whistle-stopping"

Steam locomotives were natural interrupters, show-offs, attention-getters, disrupters and stand-outs with their great bronze bells tolling, exhaust jets of steam hissing, safety valves letting go with ear-splitting roars, and whirlwind pistons and rods revolving enormous wheels. (The horn of a Diesel engine, in imitation, was required by Michigan law to be audible at least 5,300 feet away, in any weather.[90]) A train's rumble could be heard miles off. Railroads were the great sound-and-light show daily in places barely big enough to show on a map--communities in every county. This combination of advertisement and geography aroused politicians. What better, they reasoned, than to rent a train with its panache, drum up crowds, and excite voters from the rear platform at all those little burgs--towns collectively large enough to affect a vote? Thus the art of "whistle-stopping" Michigan began, especially during presidential elections. Franklin Roosevelt's rival Wendell Willkie so toured the Lower Peninsula in 1940. Harry Truman gave 'em hell in 1948 at Grand Rapids, Lansing, Detroit, and Flint.[91,92,93] Dwight Eisenhower and John Kennedy followed Truman's example. Security was tight in every case. Still, Truman was booed in Lansing; little boys threw rocks at his private car.[94]

B. State Law

Twentieth-century Michigan laws regarding railroads in large part favored state lines, and in numerous cases were the products of railroad lobbyists. Most of these laws meant safer shipping and traveling for the general public. But they first worked for the safety and security of the railroads.

It was a misdemeanor, for instance, after 1907 to "throw any stone, brick, or other missile at any passenger train, sleeping car, passenger coach, express car, mail car, baggage car, locomotive, caboose (or)

freight train."[95] Another misdemeanor, after 1921, was to tamper with any switch or derailing light.[96] And, after 1917, "any person who maliciously removes, takes or changes, adds to or takes from or in any manner interferes with any journal bearings or brasses . . . of any locomotive, tender or car . . . used by any railway" risked punishment of "imprisonment in the state prison for not less than one nor more than two years. Possession of any such bearing is deemed prima facie evidence of guilt."[97]

These modern laws followed a long series of 19th-century ones which in many cases not only favored but fostered Michigan railroads: incorporation charters of all sorts, this or that concession, laws regarding taxation set remarkably low, and particular laws running almost counter to the public interest.[98] One law especially boggles the mind. By its provisions, if a railroad could prove that a farmer had a hole anywhere in the fencing around his four lot lines, then that railroad was not liable for damages if it struck the farmer's cow on the tracks.[99] Edmund G. Love remarked of the period's chief legislator:

> Ira Sayre was a lawyer . . . for nineteen (years) he was the majority leader of the legislature, and later its speaker. During most of his life he probably wielded as much power as anyone in the state of Michigan. There was always a rumored taint of corruption about Ira Sayre . . . He was known as the railroads' man. All railroads in Michigan had to secure grants of rights-of-way and other privileges from the state legislature, (with) routes, rates and other matters . . . Ira Sayre had the final say in all these things. That he took good care of the railroads is attested to by the gold lifetime pass, good for transportation on any railroad in the United States, that he received upon his retirement. . . .[100]

Until the coming of the automobile and concurrent highways, no industry in Michigan was so favored by state law as the railroads. Or, perhaps, needed to be. The negative consequences of railroads for the state were not negligible, as will be shown.

Nonetheless, in a powerful variety of ways, Michigan railroads, powered by the steam locomotive, had positive consequences in economics, finances, society, recreation, linguistics, and literature, higher education, politics and those laws supporting the commerce, communications, and transportation of the state. It must be emphasized that these were peace-time effects, moreover, when the railroad industry was generally stable in operations. The great difference to come during wartime was a matter of strain, concentration of manpower although the work force was not increased, tighter schedules, and the fear of failure that could disappoint or endanger the country.

Part Two: In the Thunder of War

1. Defense Shipping

Though not at the battlefronts, Michigan railroads did go to war in World War Two--as much as any other force in the state. Defense suppliers and manufacturers depended on the rails--and on the steam locomotives, a large one of which would work for most of 250,000 miles.[101]

Figure 9 indicates where the Pere Marquette kept busy. (See also Appendix A.) Each city or stop marked had at least one shipper or customer thought important enough to figure in 1945 Pere Marquette publicity.[102].

Several branches now vanished had their last hurrah. The Traverse City-Petoskey stretch, the Midland-to-Reed City trackage, the northern way into Muskegon, all indicated on Figure 9, and an assortment of shorter offshoots were pressed into service. From a game-theory point of view, most of them gave alternative routes for traffic when the huge main lines were clogged. Every "streak of rust," every mile of rotting ties was prized.[103] The war effort demanded them.

An amplification of Figure 9 reveals the data in Table 2.

Arguably, then, during World War Two some 926,401 people in Michigan could be affected by just <u>one</u> railroad's service, the sales it made possible, or payrolls it made possible that would disseminate through communities, exclusive of railroad employment itself. Certain towns had no choice but to ship or receive on one line. Such "captives" of the Pere Marquette numbered at least the 28 listed in Appendix B. Wartime travel on the Pere Marquette also had "captive" a number of modest places--the same list of Appendix B. And, because of rationed gasoline, and spare parts like tires hard to get, travel in Michigan <u>did</u> noticeably happen by rail. Where freight was concerned, the railroads

Figure 9: Pere Marquette Shippers, 1945 (Pere Marquette)

Branches have been omitted.

Note: Does not show all grain elevators, lumber companies, coal yards, canneries, hatcheries, power plants, etc.

Total Pere Marquette trackage (owned): 1,505.88 miles.

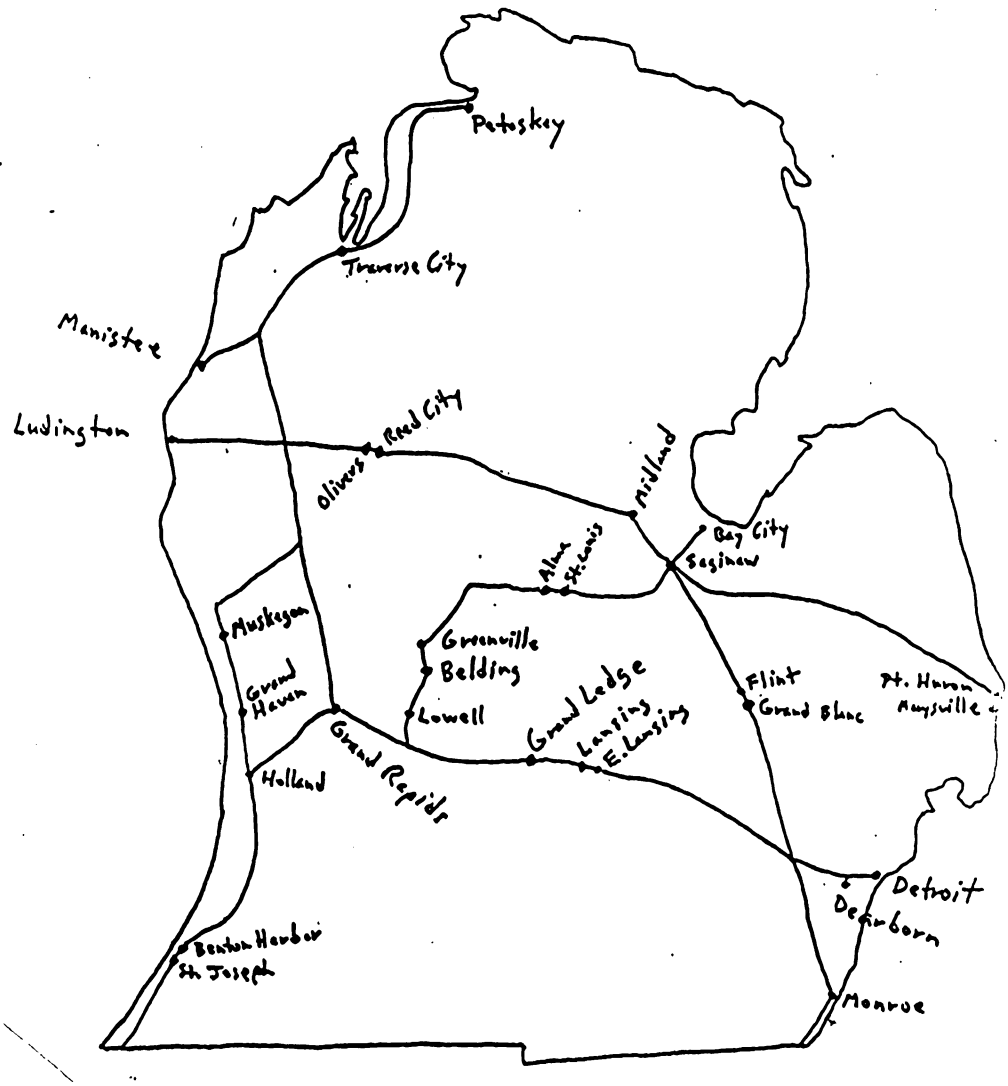


Table 2: 1945 Demographics on the Pere Marquette Railway[104]

Location	Number of Firms	Population (or Employment)
Dearborn	1	(88,000 employed, in 1939)
East Lansing	1*	5,839
Lansing	13	90,000 (1944 estimate)
Grand Ledge	4*	3,899
Lowell	6*	3,260
Belding	5*	4,089
Greenville	4	5,321
Alma	7	7,202
St. Louis	5*	3,039
Grand Rapids	26	210,000 (1944 estimate)
Grand Haven	7	8,799
Muskegon	20	70,000 (1943 estimate)
Holland	12*	14,616
Benton Harbor	10	16,668
St. Joseph	3*	8,963
Traverse City	14	14,455
Petoskey	6	6,019
Monroe	6	18,478
Grand Blanc	1*	1,012
Flint	20	151,543
Saginaw	25	90,141 (1944 estimate)
Midland	1	11,500 (1943 estimate)
Reed City	3	1,845
Olivers	3*	not available
Manistee	17*	8,694
Ludington	1*	10,000 (1943 estimate)
Marysville	1*	not available
Port Huron	8	34,968 (1944 estimate)
Bay City	8	47,956

*Indicates "captive" shippers, who could ship only on the Pere Marquette

NOTE: Table 2 does not indicate "captive" firms inside towns.

dominated, as they did nationally. National statistics make the trend clear:

Table 3: U.S. Intercity Passenger Traffic, 1941-1945[105]

	(in millions of passenger-miles)				
	1941	1942	1943	1944	1945
Railways	30,317	55,073	89,865	97,704	93,817
Highways	278,874	222,888	177,810	180,230	206,650

Table 4: U.S. Intercity Freight Traffic, 1941-1945[106]

	(in millions of ton-miles)				
	1941	1942	1943	1944	1945
Railways	481,756 =64.72%	645,422 =71.08%	734,829 =72.79%	746,912 =70.19%	690,809 =68.90%
Highways	63,258 =8.50%	48,626 =5.36%	46,394 =4.60%	47,395 =4.45%	53,442 =5.33%
All Other Modes	199,363 =26.78%	213,912 =23.56%	228,229 =22.61%	269,898 =25.36%	258,422 =25.77%

2. Teenage Labor

Hauling all those people and tons of freight left Michigan railroads, at war's end, "exhausted."[107] As the draft siphoned off personnel, state lines were forced to do more and more with fewer and fewer staff.[108] A writer in 1943 observed that "the railroads have had their own share of trouble in gaining the necessary competent machinists for their shops."[109] Part of the solution for the Pere Marquette was to hire teenagers as apprentices. Henry Truer, Jr., recalled how he hired on in 1944 at the Wyoming, Michigan, shops "at age 16," with his parents' consent, earning "43 cents an hour, and, two weeks later, 63 cents an hour," working one shift only, "eight (a.m.) to four-thirty (p.m.) in the backshop."[110] Another Michigan teen, Frank Warden, found a Pere Marquette job working on track--an alternative to summer training for his high school football team:

> In 1945, the Pere Marquette came to our (Grand Rapids South) high school . . . and said they wanted to run an experiment of a group (to straighten) a section of track over by Holland . . . our football coach thought this was a great idea . . . he got together the fifty kids . . . most of us were 16, 17 years old. We worked for that summer . . . we basically had a good time . . . we didn't lay any new track. We raised the old track with hand jacks, took out any ties that were defective (about 50% of them) . . . put new ties in, put rather large gravel and then tamped it underneath--the ballast. . . .[111]

Those kids did a maximum of "a thousand feet a day . . . at South Saugatuck--I never did find out where South Saugatuck was. . . ." Fifty other boys from other Grand Rapids high schools worked there as well. The experiment did not satisfy the railroad, partly because of "horse-play," partly because the kids refused to stay on. Warden added: "We were there on V-J Day . . . the camp deserted, and everybody went back to town. They weren't going to stay out there . . . that was pretty much the end of it."[112]

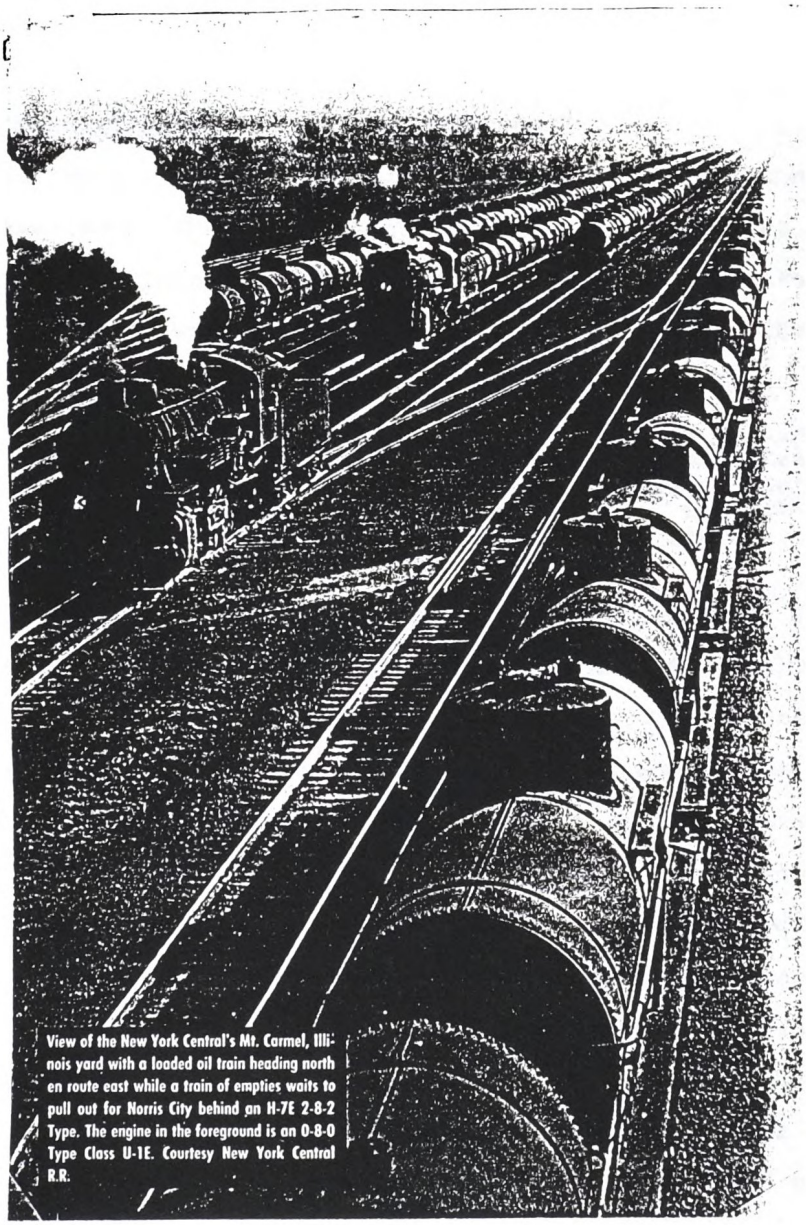
Good track was nevertheless vital. On the New York Central's, engineer Paul Cannehl recalled:

> . . . we had trains coming in and out sometimes as high as 24 a day . . . (to and from) Chicago, Grand Rapids, Toledo (to Jackson) . . . (I) handled a lot of troop trains . . . they went in to Fort Custer (at) Battle Creek . . . that's where the (German) prisoners were. . . .[113]

3. <u>"Oil Trains"</u>

Figure 10 shows a key commodity of World War Two: oil. ("Oil train" was the nickname for trains hauling petroleum.) Moving fuel for the bombers heading for Europe, the tanks in North Africa, and the ships in several oceans was a constant job, sometimes a headache. As Cannehl remarked,

> . . . oil was our main--we had solid oil trains (all going east) . . . coming out of Elkhart, Indiana (to Niles) . . . out of Niles you always had a pusher (extra steam engine, pushing a train), either way . . . Niles was in a hollow . . . they had an eight-hour day, those pusher engines. . . .[114]



View of the New York Central's Mt. Carmel, Illinois yard with a loaded oil train heading north en route east while a train of empties waits to pull out for Norris City behind an H-7E 2-8-2 Type. The engine in the foreground is an 0-8-0 Type Class U-1E. Courtesy New York Central R.R.

Figure 10: "Oil Trains" (Farrington)

Cannehl voiced common complaints of engineers:

> A lot of oil trains--cars that were stored--they came out of mothballs, and we had a lot of trouble with them . . . rusty pipes, rust getting into (the brakes) . . . they didn't have time to repair engines the way they should have, and cars . . . there were engines that the flues weren't clean, they didn't have time . . . (so) they didn't give you the steam that you need. . . .[115]

4. Communications and "Defense Railroads"

Despite all vexations, the trains kept rolling. Michigan railroaders persevered. Jessie Fox remembered her husband Irving, a Grand Trunk Western telegrapher, not overwhelmed by war business at Port Huron--though traveling soldiers crowded the depot where he worked alone, demanding he send their messages:

> He had the telephone to his ear, he was writing orders, he was taking that message on the wire, and people were coming--it was wartime--I don't know how he ever could stand it . . . they always promised him help, but he never got it. Never. . . .[116]

The Grand Trunk Western had a particular reason for congestion. Donald Hughes recalled that the G.T.W. was "a Defense Railroad," chosen by the U.S. government for its especially wide and high clearances, stronger bridges, etc., ready to take oversize and overweight defense loads. Hughes added that one such regular kind of war materiel was "armor plate for ships, from the steel yards at Gary," too heavy to move any other way. This plate was almost too heavy for the Grand Trunk Western. Each section of the plate, one to a flatcar, was so massive that by the time the carrying train reached Valparaiso, Indiana, every flatcar had to be jacked up so that its bearings, "oozing out like butter," could be replaced. Replacements of these bronze bearings were repeated at Battle Creek, Lansing, Durand, Detroit, "and every forty miles all the way East," the tonnage and friction generating constant heat.[117]

5. Munitions Shipments

Even more intensive care was lavished on the hundreds of shipments of explosives that began in, or passed through, Michigan. The Pere Marquette, said Russell Harrison, trans-shipped "train after train" of unfused 500-pound bombs--which moved unadvertised to the general public. All the railroads feared sabotage. Once, in 1942, some unfused bombs seemed to threaten Lansing. Harrison recalled an eastbound Pere Marquette freight train:

> The train crew had to stop at Grand Ledge, and the conductor walking along beside the train heard a ticking noise in one of the cars . . . it was a car of bombs. So they pulled the car into Ensel Yard and set it off on a siding . . . the (Lansing) Chief of Police came out--John O'Brien--he and I went up and opened the car . . . the bombs were all on racks. We could hear the ticking noise . . . so they had to (fly) bomb experts in from St. Louis, Missouri, to check that car. We were about ready to evacuate the neighborhood . . . that ticking was some kind of an instrument checking the impact of cars . . . against other cars. Nobody had told us about it![118]

And from Lansing, only one of the war suppliers on Figure 9, came "carload after carload of shells out of Motor Wheel (and) Oldsmobile."[119]

Imagine this pressure of traffic, Michigan's share of those majorities of ton-miles all throughout the war, channeled through junction cities (Detroit, Saginaw, Lansing, Grand Rapids), this flood of priority trains handled for the most part without mishap, run every day of the year for the whole war, and you will understand why World War Two was a great triumph for the railroads, and in Michigan the acme of the joy and thunder days.

But, all this while, railroading in Michigan had its dark side, and the steam locomotive produced grim consequences. For the sake of fairness, these must not be ignored--and for the sake of understanding why railroads today are largely supplanted by other modes of transportation, superseded by other technologies, these must be considered.

Part 3: Blood and Thunder

> Employees in the railway service, apart from liability to accidents, lead a life of responsibility and hardships. This, together with irregular habits as regards work, sleep, and meals, and exposure to dust, drafts, etc., increases their liability to sickness in spite of the fact that generally only able-bodied men are employed . . ."
>
> Industrial Health, eds.
> Kober and Hayhurst (1924)[120]

Railway (i.e., railroad) service demanded that employees be responsible, for in many ways the work could be taxing and dangerous. The "Book of Rules," given to yard and train crewmen on their first day, warned over and over that trains could maim or kill. A saying told to young employees was that "every safety rule on the railroad was written in blood," and this was true.[121] Statistics showed annually that the technological web railroading was had consequences nobody foresaw or welcomed.

Steam locomotives caused the least wanted, yet almost unavoidable consequences. These machines were the sine qua non of railroading, yet none were fully reliable. Some were "good steamers," others "jinxes," and all needed constant care. "Steamers" could and did leak, crack, and develop weak spots in their fireboxes, boilers, superheaters, flues, appliances, feedwater systems, injectors, throttles, valves, or cylinders. Steam corroded all it touched; an engine could even explode if tended poorly.[122,123] Some did, causing terrible burns or deaths. Even in the best of condition, a steam locomotive was a mass of many tons in motion forward or backward, a danger railroaders had to shun. One of the oldest regulations in the "Book of Rules" said: "Beware of movement--any track, any direction, any time."[124] Many men were squashed who forgot this, or were distracted, or did not hear an engine approaching because the rails were muffled by snow.[125,126] A steam locomotive could even be treacherous standing still. In Detroit, one Pere Marquette

fireman was killed when a rail an engine rested on turned over, spilling 243 tons onto him as he walked beside.[127] And in the worst of conditions, a steam locomotive could be "a rolling bomb."[128] It is no wonder that until well into this century a brakeman or conductor could not buy life insurance, and that burial funds were major offerings of railroad unions.[129,130]

Citizens in general did not notice these hazards, which happened in a world few of them frequented. But often the public in Michigan discovered the dark side of trains when they could not avoid them--at grade crossings on roads, in violent collisions, with bloodletting. On a subtler level, the public might have realized how "the tracks" and the railroads spoiled the environment, disrupted the growth and flow of communities, and swindled investors on a grand scale. Of course, no one railroad consistently behaved so--none could have survived. Nor was any railroad consistently cruel to its employees with unsafe working conditions, irregular though the jobs were--no line could have kept its staff. But in cases my interviewees related, citing railroads across the state, and in many references in the literature, these hazards recur and these practices are spoken of, to the sorrow of railroaders and public alike. Without doubt, these were days of "blood and thunder."

1. Affecting the Public

A. Grade Crossing Accidents

One of the trickiest things to grasp about trains--and one that numerous drivers discovered too late--was the optical illusion that trains in motion present. When one sees a train moving toward one from one's horizon, the engine seems to be relatively slow--and the whole train, foreshortened by distance and apparently bounded by two rails which converge at that horizon, seems to be tiny. The reality that the engine, when a steam locomotive, can weigh 400 tons, and that its train can be a freight train a mile long, was obscured. One probably would

not have known, as one drove, that a high-speed train with all that mass cannot stop quickly. The engineer, indeed, had limited control over this steam locomotive when it was underway--and was helpless when someone strayed into his path.[131] Even experienced railroaders sometimes found it hard to tell when trains were coming, and had "close calls" when trains almost hit them.

People died each year in accidents that were consequences of the new automobile technology meeting the old railroad one. Drivers pitted two- or three-ton vehicles against the thousands of tons of a train at public highway crossings. The warning "stop, look, and listen" on the posted crossbucks, wig-wag signals, or flashing lights there was ignored by motorists who never stopped, looked, or listened, or who did look, spotted a train coming, then "revved up" and raced to get across the tracks. "Some of them made it," said a veteran Pere Marquette engineer, "and some of them didn't."[132] The impact of a train could reduce an automobile to scrap metal and hurl it for yards. And even moving slowly, a train was a terrible obstacle which a driver tried to drive through at his peril.[133]

A particular terror at highway grade crossings--another consequence of new automobile technology clashing with old railroading--and felt in complete helplessness by engineers--was the chance that a gasoline tanker truck might put itself in the way of a train.[134] An engine's crew had no escape in such a collision, a form of flaming hell. "There was a fireball," recalled one engineer who saw such an accident happen to a friend of his. "It lit up the whole yard."[135] The Brotherhood of Locomotive Engineers campaigned for better laws and stricter regulations regarding gasoline shipped by truck.[136]

B. Train Wrecks

Another kind of spectacle, train wrecks, affected more than just railroaders. Wrecks included head-on collisions, rear-end collisions,

derailments, cases of sabotage, and other disruptions of rolling stock. When a passenger train was wrecked, riders as well as crew could be killed or injured. In freight train wrecks, besides crew casualties, shippers' goods could be damaged or ruined. In any wreck, engines or cars leaving the tracks could tear up ties and rails, too. This could inconvenience whole communities, whose primary link to the world might be broken. Furthermore, almost as soon as the noise of a wreck died away, sight-seeing "ghouls" would congregate. These persons, of both genders and all ages, would, until railroad police arrived, climb on the wreckage, steal anything loose, and impede efforts to clear the line. Many snapshots of wrecks appear in old family albums--a dominant public image of railroads in disarray.[137] Someone in them is always pointing, or grinning. An overturned locomotive, all its wheels in the air, is a prize view. The worst in human nature is revealed at a wreck--or in writers of wreck books.

Wrecks happened because steam railroading was a vulnerable industry with imperfect technological development. Rails of wrought iron or poor carbon steel cracked.[138] Switches were left open by accident--or sabotaged.[139] "Highball" signals could vanish from an engineer's sight when a sunset back-lit them. This was the situation at East Lansing's Trowbridge Junction, on the Grand Trunk Western, until 1930.[140] Railroads were also prone to constantly changing conditions. The number, schedule, and priority of freight and passenger trains varied, as did the weather, the hour of operation (dew on the rails could lose a locomotive its traction, squeezing the schedule), and the ever-present chance of human error. A motto promulgated in 1912, "Safety First," was fervent.[141] Only by continual care could railroaders avoid wrecks, and save lives--their own and the public's.

C. Trespassers

The same raw form of physics that could skewer vehicles--the tons of a train rushing down a track--were far more crippling or fatal to certain people not driving. "Cowcatchers," for instance, would not noticeably deflect anyone caught in front of a locomotive, and were in any case merely ornamental by 1946.[142]

What certain people fell prey to was the peculiar attraction of railroads as a romantic occupation, an exciting form of transportation, and a cheap, common medium of travel for the poor. Therefore, railroads were what lawyers term an "attractive nuisance," although under Michigan and federal law a railroad's premises were private property, trains were private conveyances, and unauthorized persons on either were deemed trespassers. To discourage trespassing, railroads relied on posted notices, fences, security forces, and the cooperation of local law enforcement agencies. Notices, however, tattered in the weather; fences were smashed down or rusted away; the few railroad police concentrated on city yards; and local police rarely saw anything wrong with rights-of-way used as short-cuts. Thus, with many of Michigan's rail yards and almost all Michigan main lines wide open, or ill-fenced, hoboes, children, and the unwary freely strayed in. Many were hurt, or died, annually while hopping trains, getting off trains, joy-riding on freight cars, hoboing in boxcars when a load shifted unexpectedly, or sleeping, hiking, or playing on tracks when a train seemed to come out of nowhere.

Even if you were that presumably professional trespasser, the hobo, it was no joke to be stuck on a train when "she" would not stop where you wanted to. You could be killed jumping off from a speeding train. Cy Taylor, a hobo in the 1930's, told me how he once rode a Grand Trunk Western freight from Muskegon to Durand, his destination. But, "She wouldn't stop. So I got down at the foot of the ladder, and when she seemed to go as slow as she was going to, I let loose. I rolled for two blocks before I stopped."[143]

Trains which struck trespassers while going full tilt could crush someone without pity, or throw a body a hundred yards.[144,145] Not for nothing would mothers fearfully warn their children not to play near the tracks.[146] This threat from trains was never ameliorated.

D. Asphyxiation

Nothing in railroading smacks of menace like a tunnel. It burrows into the earth to vanish from daylight, reeks of stale air, and can wear slime on its walls like "The Cask of Amontillado."[147] From its opening in 1891 until 1907, the Port Huron tunnel to Sarnia, Ontario, was no exception.[148] This mile-and-a-hundredth passage, underwater as it was, had no easy ventilation.[149] Steam locomotives passing through seriously congested it. Clouds of carbon monoxide, sulphur, dioxide, and soot rained back from smokestacks over and down the sides of trains. Passenger conductors quickly learned to shut all their windows and vestibule doors. Freight train crews hunched their shoulders and tried to breathe through their neckerchiefs. The journey was still dirty, and scary for children.

Twice, trains broke down, did not quite make it to Canada or back from there. These breakdowns caused two tragedies of asphyxiation. The first, in 1897, was thought a fluke.[150] But the second, in 1906, was too much for the St. Clair Tunnel Company--and forced electrification of locomotives operating in the tunnel.[151] Jessie Fox, born in 1894, remembered:

> There was an accident--that's when the steam engines ran through the tunnel. Now, I was only a youngster--I'm just telling you what I've heard . . . there was fumes . . . there was an accident in this tunnel, and my uncle--well, he was more like a father, he raised me . . . he went in with two or three others to rescue . . . they went in and they were overcome . . . they died . . . my mother said one of the Enrights' girls' husbands died . . . after that they started talking about electrifying. . . .[152]

In diverse ways, therefore, Michigan railroads injured or killed many people, both their own workers and the general public. It was proved over and over vividly that railroading technology had subtle and gross imperfections which clashed with the public in general, and with the emerging automobile technology in particular. Trespassers on railroad property showed how dangerous trains could be when hoboes, children, and the careless sought to take advantage of them. And even bona fide passengers discovered death on the railroad--as did railroaders. These deaths and injuries were only the most visible in a series of ways that railroading affected the public. Broader influences were at work, greater effects--like railroading's degradation of Michigan's environment.

E. Environmental Degradation

> Railroad promoters and lumber kings . . . ripped through forests . . . in a rape of Gargantuan proportions.
>
> The Search for Order, 1977-1920, Robert H. Wiebe (1967)[153]

An irreversible degradation, which Wiebe notes--the reducing to stumps of most of Michigan's miles of white pine--continued into the 20th Century. An alliance between Michigan's lumber barons and a transitory network of standard- and narrow-gauge railroads hauled millions of board feet irretrievably out of the state.[154] Poor planning on the part of some of these lines left behind a hodgepodge of trackage in cut-over lands which, after 1900, proved unprofitable, saddling successor railroads with debts--and the need to abandon many miles. Abandonment proceedings would continue to this day.[155]

Another legacy of the slapdash construction methods that railroads, to some degree, have always employed is another degradation: the tumult of a train.

"Rattler--freight train."

Railroad Avenue, Freeman L. Hubbard (1945)[156]

Simple physics explains the noise of trains. Their rumble pours forth from their primitive railroad track. All track is built by driving spikes through tie plates into wooden ties to hold rails down, and by fixing bolts through joint bars to link ends of rails together. Before 1917, rails could be as short as 26 feet in length each.[157] This created some 203 joints per rail per mile. However, a railroad track has two rails, thus it would have 406 or so joints per mile. But, usually track gangs left a gap between the end of one 26-foot rail and another, allowing for heat expansion in summer. This meant about 812 places per mile where train wheels could strike, "clickety-clack." Moreover, freight cars--the heaviest in regular service--weighed around 1900 some 50 tons apiece, when loaded, and had eight wheels apiece. A 100-car freight train (about the limit for an engine then), weighing 5,000 tons in total, put six and one-quarter tons of force per wheel through each of 800 wheels onto the track, striking 812 rail ends per mile.

Nor was this the only source of noise. Besides wheel impacts, a freight train attacked the air with overlapping sounds:

"glad hands" or air brake hoses leaking compressed air
"slack" running in and out of couplers
freight car bodies shifting up, down, and sideways
freight car doors vibrating
chains clanking
brakes engaging or releasing
loaded freight rattling

And steam locomotives added their din:

chains clanking
brakes engaging or releasing
fire doors slapping together
stoker engines grinding
booster engines "revving"
whistles blasting
safety valves "popping off"
air compressors pumping
injectors "kicking in"
blowdown valves relieving

cylinder cocks spraying
smokestack exhaust blower venting

Little wonder many railroaders lost some hearing--or that residences near railroads were not desirable.

Railroad yards and their environs could be markedly undesirable. Trains are grubby, and the steam locomotive is especially so.[158,159] Moving trains created vacuums and coated all their undercarriages by sucking up roadbed grit.[160] Car and locomotive lubricants (greases, oils, hotbox coolants), borne on gloves, smeared up hand rails, grab irons, and ladders. Omnipresent rust compounded the smudge you always got on your fingers touching railroad things. Dirt was inevitable. One Jackson woman who lived near the roundhouse earned her living washing solely railroaders' clothing.[161] Spilling out of a yard, locomotive smoke could foul a neighborhood. While engines idled, or had their fires renewed, no wash hanging downwind on a line was safe.[162] The boiler room of a yard contributed its chimney's smoke and soot as well, as did the forge room of a backshop.[163]

Air pollution was not a yard's only degradation. The water table in the area might suffer. Ashes from locomotives were regularly cleaned out and down into pits, where rainwater created acid run-off. Roundhouses and backshops polluted periodically, during inspections, as boiler-washing acids, lime, calcium, rust, water treatment chemicals, kerosene, fuel oil, greases, and other maintenance wastes fell or were hosed into drains, proceeding into city mains or the nearest convenient waterway.[164]

Railroad constructions--cuts, fills, and bridges--in the 20th Century had localized environmental effects (changing, e.g., some watershed flows). A 19th Century secondary effect, still bitterly remembered, was a series of forest fires in the northern Lower Peninsula during the final decades of the 19th Century. At least one of these blazes crossed the state, ripping through acres of cut-over lands after

the loggers retreated and their logging railroads were pulled up. However, the most enduring, blatant effect of the railroads plagued the cities, as the tracks split communities, altering the flux of urban life in a proverbial manner:

> Railroad tracks are the classic example of borders, so much so that they came to stand, long ago, for social borders too--"the wrong side of the tracks" . . . borders . . . form dead ends(,) barriers (that) halt cross-use from both sides . . . (and) form vacuums of use adjoining them.
>
> The Death and Life of Great American Cities, by Jane Jacobs (1961)[165]

Sometimes in long, sweeping curves, the tracks could be graceful, and occasionally in cities formed easily definable areas. But railroad lines tend to be arbitrary, and in Michigan cleavage lines of tracks are usually straggling and kinked. Railroads could also take precedence over city planning.[166] Railroad lawyers raised the number of dead-end streets by forbidding new neighborhoods or suburbs to build grade crossings over tracks, citing the eminent domain of railroads, and wherever possible eliminating grade crossings, especially private ones of farmers, but also ones inside towns.[167] From a railroad's point of view, the fewer places the public could cross, the fewer places accidents could occur--and the fewer places the railroad would be required to pay for in part and help maintain. In the context of a city, however, whole neighborhoods thus stood with their backs to the tracks--a zone of "decay . . . noise . . . the soot of steam locomotive days"--detached, except by trespassing, from their peers across the rails, with physical, psychological, and probably "red-lined" handicaps.[168] What many cities endure, therefore, and many citizens must adjust to, is "the general undesirability of railroad tracks as an environment."[169] And this whole state of affairs, with cities having yet another division that surely they do not need, is a consequence of railroading technology

no one foresaw--or, perhaps, in the railroad's mind, no one cared about, since railroaders saw it happen over and over without special note.

F. Financial Management

> Railroad. b. U.S. "To accomplish with great speed; to 'rush' (a person or thing) to or into a place, through a process, etc."
>
> The Compact Edition of the Oxford English Dictionary, P-Z, Vol. 2 (1971)[170]

"To railroad" became a common verb for good reason. Irregularities (such as manipulation of the Michigan legislature, through such representatives as Ira Sayre) seemed to accompany enterprises (such as railroads) touted to the public during the 19th and early 20th Centuries, the time "when the railroad was king.[171,172] Possibly part of the reason was the money. In 1919, the state of Michigan as a whole paid its railroads "upwards of $140,000,000.[173] When things went wrong with a Michigan railroad by, say, "a betrayal and breach of trust by corporate officials, usually for personal gain," they could go in such a climate spectacularly awry.[174]

This was the case with the Lower Peninsula's longest railroad, the Pere Marquette, from the very first day it consolidated, January 1, 1900, as a merger of three shaky short lines--and things stayed wrong until 1912.

Shown in part in Figure 5, the Pere Marquette began its corporate life miserably, its public stock inflated (or "watered") by $1,461.250, and its "book value" likewise inflated by $4,290,230.[175] Scholar Paul Ivey wrote that this was ipso facto "the doom of the Pere Marquette"--thanks to the wrecking crew of self-styled "Management" in charge.[176] As Ivey observed:

> Directors . . . were given very substantial commissions in . . . Pere Marquette bonds (which) they sold . . . (and) they were materially rewarded for their services.[177]

Their services could have been an undertaker's:

> The road and equipment were undermaintained, unearned dividends were paid on common stock . . . $2,500,000 net was added to current liabilities. They also added more than $14,500,000 to the outstanding long time debt. . . .[178]
>
> Millions of dollars of . . . worthless stock was forced onto the Pere Marquette. . . .[179]
>
> Bonds were issued (fraudulently). . . .[180]
>
> The Pere Marquette (reached) the lowest depths of physical inefficiency that (a road can) reach and still operate. . . .[181]

And this had profound implications for Michigan, Ivey concluded:

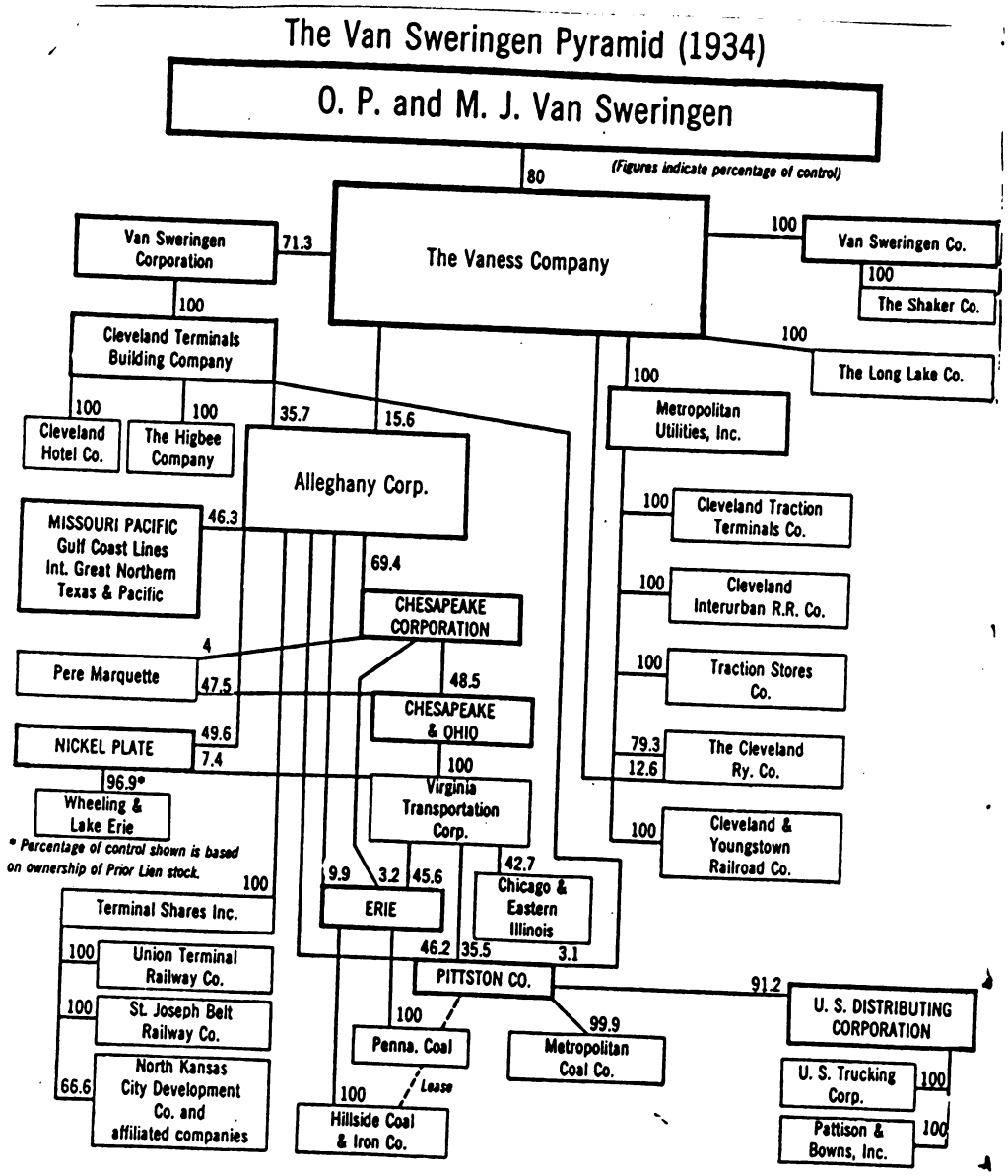
> Interested parties (reduced) the Pere Marquette and (caused) a loss to innocent holders of bonds and stock . . . (communities) served by the Pere Marquette suffered by reason of poor service . . . the growth and development of the State of Michigan was retarded.[182]

In 1923, partially restored to health by receivership, Interstate Commerce Commission scrutiny, and new management, the Pere Marquette became the latest property of two Cleveland real estate dealers--who would railroad in Michigan (and beyond) on a grand scale, and with mixed impacts. The brothers Oris P. and Mantis J. Van Sweringen, who "had learned the art of using other people's money," as "masters of leverage," made the Pere Marquette part of America's fifth-largest railroad system.[183] What they eventually put together is shown in Figure 11.[184]

Under Van Sweringen control, the Pere Marquette strengthened its connections to Michigan industries. Dow Chemical Company continued to grow along the railroad at Midland.[185] Core plants of General Motors Corporation continued to ship and receive via the Pere Marquette at Flint, Saginaw, Lansing, and Detroit, assisted by "belt" railways at Detroit, Flint, and Lansing.[186] The line even built an experimental quarter-mile of track totally of concrete "on a 0.1 percent grade between Detroit and Plymouth," testing the endurance of concrete beneath the daily passage of "seven scheduled passenger trains, seven scheduled freight trains, four regular switching movements, and about two extra freight trains."[187]

Figure 11: The Van Sweringen Pyramid (1934)

(Haberman)



SOURCE: *Fortune*

But is is arguable how much of the Pere Marquette's prosperity in Van Sweringen times was due to generally good business health, and how much was thanks to career railroaders like Frank H. Alfred, Pere Marquette President--and not the result of the Van Sweringens.[188] "They were just bankers," said engineer Sam Chidester, who hired on with the Pere Marquette in 1922. "They knew nothing about railroads."[189] Chidester told a story that summed up the Van Sweringens' skill at running trains:

> One of the Van Sweringens had his private car attached to the end of a train at Grand Rapids. I was the fireman. Van Sweringen strolled up to the cab and got to talking to the engineer.
>
> "What do you think of this run?" Van Sweringen said.
>
> "Not much," said the engineer.
>
> "Why?"
>
> "The schedule's padded," said the engineer. "Look, if you'd give me the chance I could run her lots faster."
>
> Van Sweringen thought a second, then took out his business card and wrote on the back of it. He gave it to the brakeman and said, "Take this to the dispatcher."
>
> The brakeman came back and said, "The road is yours to Chicago."
>
> We got in forty-five minutes ahead of schedule.[190]

Schedules were not the only thing "padded" in the Van Sweringen Pere Marquette. On October 28, 1929, its stock stood at 260. Next day came Black Tuesday, the stock market crash, and the Pere Marquette began to fall. By September, 1930, its stock stood at 130.[191]

"Water" also was squeezed out in gallons from stock of the Alleghany Corporation, the Pere Marquette's "boss." As Ron Chernow wrote:

> (The) Van Sweringen holding companies took control of other holding companies in an endless hall of mirrors . . . (Alleghany) stock . . . was meant to be . . . the super holding company atop their pyramid of debt . . . (but) Alleghany shares feverishly bid up (in) early 1929 now led the market down in the autumn of 1930. They fell from 36 to 10 in just two months . . . ultimately Alleghany stock would fall to 37-1/2 cents per share.[192,193]

Of course, the Pere Marquette would survive--and survive the Great Depression--but it would thereafter be coupled to the fortunes of the Chesapeake and Ohio, its primary connection and, in 1947, the railroad that would absorb it.

This brief discussion of money, power, and foolhardiness shows only the most public problems of just one Michigan railroad. But it suggests several implications:

i. That the railroad industry deals in huge sums. This is certainly true; an Equipment Trust Agreement between the Pere Marquette and the National Bank of Detroit amounted to $2,775,000);[194]

ii. That the railroad industry has fixed ties to financiers, which it does; ". . . manacles . . . found railroads to exclusive relations with traditional bankers . . .";[195] and

iii. That as investors in and users of the railroad industry, the people of Michigan are subject to forces far removed from Michigan--who may "know nothing about railroading."

The reader must decide. What he or she may conclude, however, is that in ways gross and subtle, present and historical, Michigan's railroads have negatively affected Michigan citizens. Be it through losses of monies invested in a risky railroad, or be it through a city altered and disrupted by tracks, or be it by assaults on the environment, or be it by enduring deaths and injuries, Michiganians have suffered from the presence of railroads.

Unfortunately, state railroaders have known greater grief, "many sorrows."[196] Men died or were maimed each year in the joy and thunder days. Their toll begins with deaths and injuries due to their primary tool: the steam locomotive.

2. Besetting the Railroaders

A. Steam Locomotive Dangers

Each steam locomotive represented a calculated risk by a railroad, and its insurer, that up to 250 pounds per square inch of steam could be safely contained and successfully applied during the lifetime of the boiler, possibly fifty years. Inasmuch as raising and lowering steam pressure put strain on boiler steel, a railroad tried to keep a steam locomotive fired up as much as possible. Running the locomotive (at best, 75 percent of a year) gave a railroad the best opportunity to exploit its investment and maximize its return. Thus, the technology set a tempo that railroaders had to follow: run, run, run. If you worked for a railroad, you probably took pride in obeying this demanding schedule. (Timetable schedules themselves may have evolved partly to keep steam locomotives most active.) If you were a stupid or careless railroader, the constant risks in a steamer could hurt or kill you.

Hitting a wash-out plug on the cab backhead, for instance, on a hot locomotive was lame-brained; the plug could strip its threads, pop out, and shower you with a jet of steam. This happened at least once in Michigan.[197] Or, insufficient water in the boiler could lead its "crown" sheet, over the firebox, to buckle, admit water onto a 3,000°F. fire--then explode. This too happened at least once in Michigan:

> They were plowing snow, and they let the water get too low, and the firebox had become extremely hot. Some people thought it might have become red hot. Somebody hit the (injector), to put water into the locomotive, and the firebox did indeed buckle . . . that was (on) the Detroit, Caro and Sandusky . . . the result was that the grates in the fire came out between the engineer and the fireman, who fortunately were sitting on (their) boxes on each side, so they had their legs out of the way . . . they would certainly have lost a leg if that iron had come through that fast, like it was shot out of a steam cannon. The smoke chest door (at the front of the locomotive) ended up fifty, sixty yards down the track (with) the force of the explosion through the flues . . . the railway never repaired the engine. It was scrapped."[198]

B. General Dangers

Deaths and injuries came from more than just scalding steam. Railroaders met falls, collisions, wrecks, and many other accidents. Excluding numerous accidents at grade crossings, 52 Michigan residents were killed and 666 were injured in 1919.[199] The Michigan Public Utilities Commission identified 15 classes of accidents that killed the 52 and injured the 666:

> At stations or loading platforms;
> Coupling or uncoupling;
> Collisions;
> Derailments;
> Defect or failure of equipment or roadway;
> Falling from locomotive or car;
> Handling freight or baggage;
> Hitting overhead or side obstruction;
> Jumping on or off locomotive or car;
> Parting of trains;
> Repairing track or roadbed;
> Switching;
> Struck by locomotive or car;
> Miscellaneous or other.[200]

C. Consequences of Changing Technology

> . . . Machines follow the rule of continuous development.
>
> <u>The Evolution of Technology</u>,
> George Basalla (1988)[201]

Above and beyond these almost routine hazards of railroading a year after World War One, a greater and ubiquitous peril developed during the rest of the Age of Steam. Locomotives achieved tremendous size and power. Technology thus again demonstrated consequences that no one foresaw or welcomed, although at the time the grander technology was, indeed, welcomed by management, admired by the public, and operated with pride by railroaders.[202]

Prodded by the three great locomotive manufacturers (the American Locomotive Company, Baldwin Locomotive Works, and Lima Locomotive Works), railroads agreed to try out larger engines and try new refinements. Boiler steel and boiler design in particular changed for the better. Superheaters became widely adopted as engines grew larger.[203]

Welding techniques and patterning improved. Altogether, with these technological advances, possible steam pressure rose, as did managements' hopes, and new, truly mammoth machines bestrode the Lower Peninsula. Between 1937 and 1951, Pere Marquette 1200-class locomotives pulled freight trains between Saginaw, Detroit, Toledo, Lansing, Grand Rapids, and Chicago. Each "Twelve-Hundred" had 69-inch diameter driving wheels, a starting horsepower of 2,979, and a length of 101 feet.[204]

But other consequences followed these behemoths and their sisters on other lines. Technology bred further technology. Such stronger locomotives could pull heavier trains. Cars and wheels had to be stronger to bear greater loads. A car especially had to be stout because on any given run it could be coupled right to the engine--forced to pull the whole train behind it.[205] Heavier and faster trains took to the rails. Roadbeds had to be stronger--shop crews had to handle more and more complex engines--schedules tightened as these faster engines insured quicker deliveries, hence greater competition could be offered by management--and a succession of accidents ensued as technology bore down on railroaders, and "human error" came into play.

Bigger engines could and did lead to bigger boiler explosions. Heavier cars in wrecks meant bigger pile-ups, and more spoiled freight. Faster trains meant less margin for error when a train and automobiles approached a grade crossing. Schedule pressures meant more pressures on yard crews to switch heavier cars around faster. Competition meant night as well as day operation--traditional on railroads, but adding still further pressure on yard crews handling the faster trains, and continuing an old danger for on-the-road trainmen. No wonder, then, that my interviewees, almost to a person, each had some memory of grief. Their recollections fall into seven categories:

i. On-the-Road Incidents

ii. Grade Crossing Accidents

iii. Maintenance-of-Way Accidents

iv. Perils of the Railroad Shop

v. Yard Accidents

vi. Wrecking Crew Accidents

vii. Runaway Trains

Written records of such accidents are rare, unless they came to the notice of the Interstate Commerce Commission, or were mentioned in local newspapers, both because accidents were common and because railroaders in the main are not writers, and tend to hate paperwork.[206] But the individual incidents remembered by my interviewees struck them vividly, and dramatize each category effectively.

i. On-the-Road Incidents

Pere Marquette engineer Clarence Gangluff was blunt:

> Yes, I got hurt. I had a tip-over. When they built the new track . . . down out of Monroe . . . all there was, there was ground pushed in there. We come along with a 600, we had a 600(-class) engine . . . the weight of that engine (about 108 tons)[207] pushed the track, went on down in. She tipped right over . . . both of us (Gangluff and his fireman) jumped out of the window. I said I'd never jump out of a window, because sometimes you'd get crushed right there with an engine lying right on top of you, see? You don't get far away enough. . . .[208]

Mechanic-electrician Orville Swick recalled one horrible foggy night on the Pere Marquette's high bridge at Avoca. For some reason, a freight train stopped on a single-track span--in the days before radios, before there was any direct communication between engine and caboose. The rear brakeman thought they had arrived at a station, barged out of the caboose, swung out on the step, and let go. He fell over 75 feet to his death.[209]

And in the days when freight cars had running boards on their roofs, on occasions when a brakeman was incautious, there were times when he (or a hobo) might be squashed between the car roof and the bottom of a bridge or in an underpass.[210]

The full history of railroad accidents will probably never be written, but surely on-the-road incidents took their toll.

ii. Grade Crossing Accidents

Grade crossings have already been referred to here, but from the point of view of train crews they had especial hazards. An engineer can never totally be sure when he approaches one, when a pedestrian stands supposedly waiting for the train to pass, whether that person on the ground may not jump before the train, or in some feeble-mindedness begin across, then pause. Moreover, the result of hitting something at a grade crossing could never quite be predicted. Swick recalled one example of mayhem in mid-Michigan, again on the Pere Marquette he worked for:

> Back before World War II a 700-class passenger engine (weighing approximately 120 tons)[211] hit an auto over near Grand Ledge while doing over 70 miles an hour. The engine dug into the dirt and went end over end several times, shearing off telephone poles and wires, killing both enginemen. I was at the (Wyoming, Michigan) roundhouse when they brought it in, with the boiler on one flatcar and the trucks and frame on another.[212]

And Gale Leach, of the Pere Marquette, suggested another ghastly moment: "You're at a railroad crossing and the gate's down and the train jumps the track and goes through that gate and comes out at the automobile. There's no way of stopping it."[213]

As has been pointed out many times, the only truly effective way to eliminate grade crossing accidents is to eliminate grade crossings--to have grade separations. But until a commitment of millions of dollars is made, with lengthy disruption of hundreds of grade crossings in the process--or, until there are no more railroads--tragedies will continue to happen where rail crosses road.

iii. Maintenance-of-Way Accidents

Given the nature of trains, continual maintenance of the permanent way, the right-of-way, will always be necessary. Given all the variables of railroad working, human error by maintenance crews will occur, and accidents ensue. Not necessarily deadly, though painful, such accidents have their own stamp. Foreman Ralph Antcliff of the Pere

Marquette remembered a stack of pilings that got loose, nearly crushing a young temporary employee in World War Two.[214] Antcliff also remembered a piledriver which a fast freight train hit at Ionia, unexpectedly, in the night--in the middle of the Grand River Bridge. No one died then in 1929, but it was a "job" to clean up.[215] Grand Trunk Western foreman Clyde Hart recalled a man hobbling "all day" when he hit himself in the knee with a spike maul.[216] All comical, as related. But Pere Marquette trackman Clarence Vicent evoked the definite peril possible:

> Sometimes you'd have to outrun the train--it would come right at you . . . they wanted to get it done quick in P.M. days . . . years ago, you worked until (an approaching) train got within a few feet of you . . . (once) we put in ties there in Grand Rapids--you see the train go down, about the time you just get the tie out pretty well, here come the train back again. There must be an engineer on there--he never looked back, he just back right up, you know. An old fella, he was hard of hearing . . . he'd back that engine right up on top of you if you didn't watch him . . . wind (of a passing train) can suck you in. . . .[217]

iv. Perils of the Railroad Shop

No fewer than 25 substances commonly found around a shop, including coal dust, sand, kerosene, ethyl acetate, and creosote, were toxic; some were even lethal. (See Appendices C and D.) Few were respected as such in the joy and thunder days--though one, soot, is the oldest-known carcinogen in the world, studied first in 1775.[218]

Least considered--although called "ubiquitous" in one study of a railroad shop--was asbestos magnesia.[219] Used in shop boiler rooms and on every engine as insulation, nicknamed "lagging," its tardy legacy of mesothelioma, a lung cancer specific to exposure to asbestos dust, is even now killing old shopmen, and its effects will be felt in the form of "excess deaths" for decades more.[220] Asbestos was, at periodic inspections, ripped off locomotives, replaced by being soaked in water and patted onto cab backheads, sawed into blocks and wrapped around boilers (see Figure 12, of the Pere Marquette's Wyoming shop; the engine

Figure 12: Pere Marquette Shops, Wyoming, Michigan, 1942 (C&O RR/C&OHS)

in the air displays asbestos blocks), and trod underfoot by shopmen, perhaps then worn home as dust on their clothes (when in some cases they did not have showers).[221] At the Ann Arbor shop in Owosso, a father and son had the same trade: insulators. Both died of mesothelioma.[222]

Much noticed, but little guarded against, was the sheer volume of noise: machine tools grinding or whining or grating, pneumatic tools hissing and coughing, rivet guns burping, Alemite grease guns barking, and that omnipresent tool, the hammer, "persuading" some part. Deafness in some degree was a hallmark of the shopworker, and Figure 13 shows a particularly abhorrent version of it: "boilermaker's deafness."[223]

Guy Ferris, an Ann Arbor machinist at Owosso, gave warning against weight--another component of steam locomotive technology. He cautioned not to try to hold onto the driving wheels of an engine when it was hoisted in the air, because "the counterweights will spin and the flange will take your fingers off."[224] Jim Macey, a Grand Trunk Western machinist at Battle Creek, recalled an inferior hook straightening out on a sling, and a massive basket of parts falling, almost flattening him beneath.[225] And Henry Truer, Jr., a Pere Marquette machinist at Wyoming, remembered what almost was one of the biggest weight accidents of all when he was shown Figure 13:

> You see how this sling is around the front of the boiler on the 254? They had a 1200 (which weighs 221-1/4 tons, empty[226])--up in there on a Christmas Eve, anywhere from 1940 to 1944 (Figure 11 was taken in 1942--D.J.)--and it rolled over, on its side, while it was up in the air . . . and they worked all Christmas night to get it straight. After that, they put this big sling with casted pads under the cylinders, so it wouldn't turn, and they put a square bar across the back like it has got here now, so it would never do that again . . . (before that it had) just slings. . . .[227]

It was no accident that a full-time nurse was one of the crew at Wyoming.[228] In addition to hazardous materials, noise, and great weights, a shop generally had poor light, limited heating, and restricted space.[229] For their own sake, machinists developed a slow, careful

Figure 13: "Boilermaker's Deafness" (Hunter)

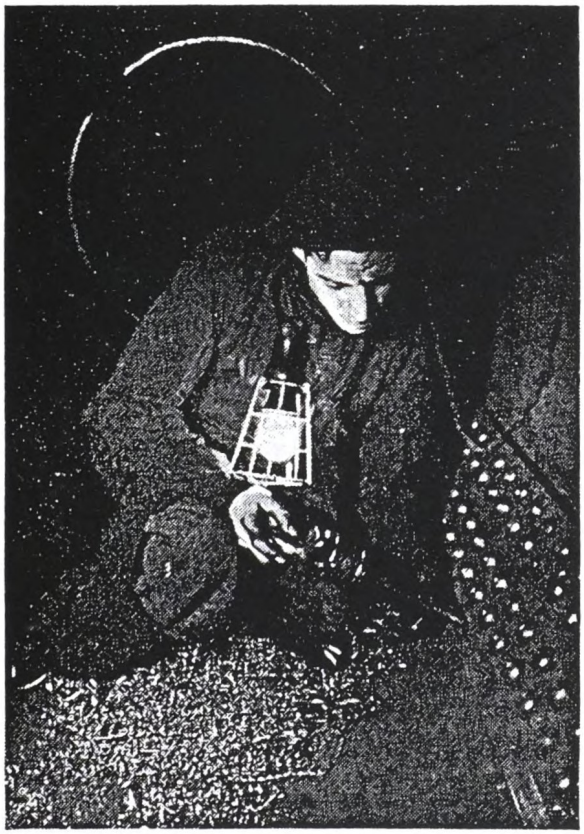


FIG. 310.—Boilermakers' Deafness. The man has crawled into the Steam Drum of a Boiler through the Manhole and is seen caulking a Seam with a Compressed-air Tool. The Noise produced is indescribable

pace of work, lest a job in a lathe, for example, pop out at them--as the Ann Arbor's Howard Brown remembered once at Owosso.[230]

v. Yard Accidents

Foot for foot, a railroad yard could be the most threatening place on a railroad. Many cars were switched around in irregular movements at all hours of the day, and frequently at night, in all weathers. A switchman operating switches, even if not habitually drunk (as Sam Chidester remembered them on the Pere Marquette, and Jessie Fox recalled them on the Grand Trunk Western),[231,232] or a brakeman or a conductor "spotting" cars, had to cope with the same great weights of cars an on-the-road crew did, but yard cars moved quietly at slow speeds and gave little warning they were coming. Pere Marquette policeman Russell Harrison said that "you always had to be alert," noting that a fellow policeman stepped out of a building "and a boxcar cut him in half."[233] Snow tended to drift between alleys formed by strings of boxcars, and made switches freeze. Strings of cars restricted sight lines, and the alleys men walked in had very tight clearances. Then, until the end of steam locomotives, a crude appliance carried on each engine, or piled in yard storehouses, called a "push pole," proved extremely treacherous. A "push pole" let an engine shove a car on another track without having to be switched over to touch directly. But a "pole" was likely to drop, snap, slither loose, or jack-knife into the man using it, doing him harm.[234] So wicked was the "pole," Freeman Hubbard noted in 1940, that yards gained the nickname of "slaughterhouse" for yard crews.[235] One Pere Marquette conductor, in a fit of ingenuity, tried to use an even simpler appliance to do what a "push pole" did. Instead of holding a "pole" diagonally between an engine and a car, he held up a 2"X4" stud instead. It broke in two, caught him in the gut, and killed him.[236]

Grue of another kind came in a Grand Trunk Western yard accident:

> The town was Capac . . . back when they still had double track. Having lined the yard up for a fast passenger (train), (an agent) had a

> freight waiting. (He) picked up some train orders to carry around to the engineer, and stepped in front of the engine--right in front of the path of the passenger he's just lined the yard for. . . .[237]

Pere Marquette engineer Sam Chidester managed to live through a yard blunder:

> Now, I pretty near got killed. Passage was the engineer. We was on a (New) Buffalo job. It was an 1100(-class engine). We had yarded the train, come back through on the tracks, and was backing down the running track, and the check valve--boiler check--stuck up. So he (Passage) was going way too fast for in the yard--going 20, 25 miles an hour, at least--and I went out on the running board with the coal pick to hit it a whack. And somebody had left the switch open on one end of the scale (weighing) track. There were 13 or 14 cars of sand sitting in there, just in the clear. Boy, she (the engine) went in there, and we hit! I flew through the air like the man on the flying trapeze, went over a couple of tracks, and just before I hit the ground this rail was right in front of me, my head . . . I put my hands like that, and cracked my left wrist. . . .[238]

Not to mention the number of men--surely under-reported--hurt when they disobeyed the primary rule, "Step <u>over</u> a rail, <u>never</u> on it," and slipped. . . .

vi. Wrecking Crew Accidents

Wrecks, themselves accidents, could generate further accidents. A wreck presented a wrecking crew with an incredible (and usually top-heavy) jumble of steel, with "trucks going here and there . . . pipes broke, it can be rail-broke, frames broke . . . a car made of wood is almost a total disaster."[239] As Clyde Hart recalled, a wrecking crew could work "up to two days and two nights."[240] Gale Leach, 43 years on the Pere Marquette (and C&O) wrecking crew at Flint, remembered the stress:

> If you were on the wrecking crew, you were subject to a 24-hour call . . . a wreck runs almost like a case of measles in town. One time, you could go for a month without being called out . . . then, all of a sudden--I've been to high as seven wrecks in overnight . . . move from one right to the other--just keep right on going right on around 'til we got them all on. . . .[241]

In such jobs, care could give way to weariness. A crewman got no rest, could work for 30 hours straight, Howard Brown remembered--"but you had the right to eat every four hours."[242] Pressure from the "brass," probably standing by, was enormous: get the line open--get the trains rolling--on, on, on. Bulldozers might attack the wreckage. A doughty steam crane might yank at trucks.[243] Flares or floodlights burned all night long as the mess gradually came apart in chunks. The thunder of the wreck, which one earwitness said sounded "like the world coming to an end," gave way to orders shouted, the crane grumbling, hunks of cars being dropped clear of the line, the hiss of torches slicing through stubborn clots of steel, and the other noises of the crew fighting entropy. Humans had limits. Gale Leach remembered:

> Seconds of carelessness can create havoc . . . I was on a derailment one time. The men were getting ready to make a move with a hook--a crane--(moving) a locomotive. Very cautiously . . . one 3/8" cotter key was not in place. Nobody saw it, nobody thought anything of it. They put a strain on it. And almost like a rifle shot, I heard BANG! The cable dropped. Within two seconds, a man said, "Oh, my God! Get help! Close it down! Get help!" The pin had struck a man in the head--killed him. I stood there. I cried . . . when I think of him, I cry. That man had three years to go, and he could've drawn retirement. God retired him. He retired because somebody neglected to put (a key) in.[244]

vii. Runaway Trains

A runaway train shocks a railroad, and creates a logistical problem: how do we stop the thing? Runaways may be of attended or unattended equipment, may be a single engine or car or more than one of something.[245] Howsoever, tons of rolling stock--set moving by brake failure and gravity, sabotage, carelessness, or other causes--dash along a track in the face of all other traffic and with little warning to the public. A runaway locomotive is terrifying.

Logistics offer four ways to halt a runaway. Either 1) hope it will run down and stop, or 2) put a derailer in its path, to dump it in a ditch--but, there are few derailers on a main line--or, 3) throw a

switch to get it side-tracked, thus ramming it into whatever the siding ends at, or 4) chase it with an engine, execute a risky maneuver to couple onto it, then hit the brakes on the chasing engine and drag the runaway to a standstill. Each option depends on the quick-wittedness of the operating department--and the contents of the runaway, which during World War Two and after could be flammable, explosive, toxic, or radioactive.[246]

Runaways date from the infancy of railroading. A runaway--an engine not yet equipped with any braking technology--ran down and killed one of its own railway's directors at the Rainhill Trials in England in 1839.[247] The runaway, one student of railroads remarked, "was not uncommon."[248] Sam Chidester recalled that the Pere Marquette fired an engineer who was so foolish as to start one.[249] Jessie Fox evoked the terror of a Grand Trunk Western runaway:

> My husband was at Tappan (Tower, near Port Huron). And they reported they had no air--no air brakes. So they turned the switches so that train could head down into the ice house, because they didn't want it going into the tunnel . . . when that train went by Tappan, where my husband worked, he said those wheels were just like fire. (From stuck brake shoes?--D.J.) They had no control of it. And the fireman jumped. The engineer stayed on, which was a blessing. Because they at last did get the brakes working . . . someone forgot to take care of the brakes on that . . . that was freight. . . .[250]

Paradoxically, runaways could seem as risible as they were risky. Popular accounts suggest this:

> At Caro, Michigan, they used to go to Bay City . . . they had an awful hill coming out of Caro. They had a siding there . . . and they would leave half the train there. Then they would go back and get the front half, pull it up the hill, join the two together, and go off to Akron, towards Ross's Crossing and Quanicassee. Well, they came up one day to find that the first half that they had left--was gone. Some leak in the air line, or something, had let it drift. And it was picking up speed, headed for Bay City all by itself. They chased it down. They knew they were getting closer as they saw the farmers still agape, gazing down the track

> at this train with a waycar (caboose) on the end, but no engine. . . .[251]

Hills, or even slight grades, give railroads headaches to overcome--but in the cheap style of 19th-century Michigan railroad building, grades were not avoided and grading was minimal. The Pere Marquette main line between Detroit and Chicago, according to a C&O official, had some grades "as bad as anything in West Virginia," including the 2.2 percent New Richmond hill.[252] Therefore, runaways had many downhill grades to get loose on.[253] Because railroads in Michigan tended to connect population centers relatively near to each other, a runaway could easily reach a city. Such was the case in another popular account--which had the potential for disaster:

> Another time (a runaway) happened in a little town called Kingsley . . . on the Grand Rapids and Indiana. Of course, their branch went into Traverse City. They chased that one down. They had police in Traverse City to flag the crossings . . . because this was one single boxcar that they had lost. Obviously, the boxcar wouldn't whistle for the crossings . . . they caught it before it went (into Grand Traverse Bay). They came up behind it--fortunately, the coupling was open--and they butted into it . . . they chased it with an engine a number of miles. . . .[254]

Complicating the crisis of a runaway is the railroad's ancient right of "eminent domain," which means that the railroad yielded to nothing but natural barriers (rivers, cliffs, the Great Lakes).[255] Thus, a runaway has nothing in front of it on a main line for it to be halted by until the railroad puts something there--no bridge abutments close to the tracks, no building loading docks, no highways that take precedence. A railroad is its own boss that way. In our time, this makes former railroad rights-of-way such attractive routes for hiking trails--and gives railroads some extra income by giving telephone companies space for fiber-optic cables. But runaways run free, simply run away.

* * *

Blood and thunder, then, as much as joy, followed the steam locomotive in Michigan. Where the public was concerned, the railroads could deal out deaths or injuries at grade crossings, in a tunnel, or at any point where someone was casually trespassing. The railroads were further responsible for continual noise, frequent air pollution, and intermittent water pollution, as well as several disruptions of cities. And the public also ran the risk of investing in Michigan railroads, only to find that railroad management could be guilty of ineptitude, or even deliberate manipulations.

Railroaders themselves were beset by far more negative consequences as they directly and daily dealt with steam locomotive technology and railroad systems. Hazards specific to the profession of railroading included on-the-road incidents, collisions with public vehicles at grade crossings--which road crews risked each and every run--maintenance-of-way accidents, intrinsic perils of the railroad repair shop, accidents around yards, wrecking crew accidents, and the infrequent--but nerve-wracking--runaway trains. To bear up under all these dangers, Michigan railroaders had to be hardy.

As, indeed, they were, using particular ways of dress, language, thought, and action to bolster themselves. Who they were--and how they survived--will now appear.

CHAPTER TWO

THE SUBCULTURE OF THE RAILS

CHAPTER TWO: THE SUBCULTURE OF THE RAILS

As the age of the steam locomotive recedes further and further, nostalgia for its grows. A brisk trade exists in photographs, slides, movies, tape recordings, videotapes and periodicals, in large part devoted to "the iron horse."

But how much more intriguing than such images and echoes was the actual machine--and its multiple interactions with technologies of transportation--and the work force that made steam locomotives possible. That work force formed a unique subculture in Michigan.

A subculture, by standard definition, is an "economic . . . group exhibiting characteristic patterns of behavior sufficient to distinguish it from others within an embracing culture or society."[256] Railroaders, by dress and language alone, were distinct from other American industrial subcultures. Also, the very act of operating trains created and sustained particular "patterns of behavior," not least shown by railroaders' fanaticism about time--and their peculiar occupational safety and health concerns. By choices the railroading subculture itself made, certain sustained patterns of discrimination served to "distinguish" railroaders from two other sizeable subcultures in America: women and Afro-Americans.

"Patterns" in a subculture, as Sykes notes, were "peculiar to itself."[257] This held true in railroading, where rhythms of jobs--frozen by glacial seniority procedures, yet kept fluid by "the extra board"--were "characteristic." Nor did any other subculture affect all the vocabulary, habits, and paraphernalia--from cabooses and "torpedoes" to "washouts" and merchandise time freights--of railroading. And, as Kelly remarks, in a subculture "knowledge inheres in social roles . . . and these roles are specific."[258] So specific were railroaders' roles that an electrician would not know how to start helping a pipefitter--and his union rules would preclude his trying to.[259]

Michigan railroaders formed part of the national railroading subculture in unique ways. Not the least distinction of railroaders between Lakes Huron and Michigan was how they tackled--and, in large part, bested--state geography. Rivers, hills, marshes, moraines--Michigan presented railroaders with many obstacles, and stubborn Michigan railroaders bullied their way through. In turn, the geography self-selected those who would master it. And the story of Michigan railroading to this day is those people.

The reader must understand Michigan railroaders, past and present, if he or she is to know Michigan railroading, and if he or she would be able to see railroading in the whole state transportation panorama. The reader must further understand the basic qualities of a Michigan railroad man, particularities that all contributed to his image of himself--things he would no more have questioned than a sunrise. A railroad man in Michigan had a special kind of dress. He spoke a different language while he wore these clothes.[260] He was a fanatic about keeping correct time. He jealously guarded his seniority all his working life. He had to belong to a union to hold any significant job, and his union supported him in discriminating against women, Afro-Americans, and other minorities--limiting them to menial railroad jobs. He had unusual, continuing fears and concerns for his safety and health on the job. He basked, however, in a status--in being part of an American legend, centered around the steam locomotive. And he had a hard core of pride in his work that sustained him through long hours and all weathers.

1. The Uniqueness of Michigan Railroading

Railroaders in Michigan were unique. They had to best the geography. The Lower Peninsula, with the bulk of state trackage, went nowhere except north, ending at Lakes Huron and Michigan. This huge dead-end gave trains no short cut to the Midwest when traveling west. Passengers

did not usually cross Michigan on transcontinental trips. Freight likewise found no quick route from, for instance, Great Lakes graineries to Eastern mills, or from Appalachian coal mines to Great Plains cities. National shippers thus did not opt for Michigan itineraries. More traffic began in and left Michigan than entered it.[261] Also, Michigan trains had to buck some nearly roller-coaster sections of the state.

> The topography of Michigan is really bad. So many streams . . . when they graded back in the old days, they used horses and mules. They didn't have any cranes . . . steam engines would have an awful time . . . (on a big hill), the friction bearings on the boxcars(,) they'd get slipping . . . you'd hear them, chir-r-r-r . . . they would start spinning. . . .[262]

And the engineers would grab their throttles, pour on more steam, "goose" their engines, practically wrestle with the slope. Altogether, "Railroading in Michigan (was) extremely hard and expensive."[263]

2. The Uniqueness of the Michigan Railroader

Like their fellows nationally, Michigan railroaders stood apart. By dress, language, fanaticism about time, seniority rules, and union practices, they went their own way. They had a nickname: if you weren't a railroader, you were a "civilian."[264] Moreover, they discriminated. Their union constitutions barred women and minorities from most railroad jobs--a practice that lasted throughout the age of steam. They formed a subculture of labor which my interviewees all accepted or belonged to. And they were hardy men, as well as proud.

A. Dress

A railroader could be recognized by his blue-collar clothes, with one or two railroad particularities. Webster Schweitzer, for instance, said his Grand Trunk Western brakeman's outfit included overalls, work shoes, a shirt, mittens (gloves), a handkerchief around his neck (to stop cinders working in), a cap with a bill, and a 21-jewel Hamilton pocket watch.[265] Gale Leach explained the clothing:

> You dress for the weather . . . in the summer, you don't peel off clothes . . . you may get hurt just wanting to take off a shirt . . . or you may be out on a wreck, and just take a glove off, and say, "Well, it's just going to be a minute." Sometimes that's all it takes for an accident to set up. . . .[266]

That big watch--oldtimers called it a "turnip"--was owned by all personnel concerned with any train movement. It was checked against others in a ritual of train crews before any train departed--and corrected by a jeweler once every month. Correct time was vital. Train orders, track repair schedules, timetables, etc., all listed hours and minutes, which a railroader sometimes set his life on. Sam Chidester told of Pere Marquette trains working on the single-track "North End"--Grand Rapids to Bay View--in the days prior to line-side telephones. They operated by train order and timetable. If two trains failed to "meet" on time at a pre-arranged siding, either both had to wait for better information, or one or both had to proceed, hoping to see the smoke of the other from afar. "A lot of men lost their nerve," Chidester said, ruining the schedule by pausing.[267] But the alternative was the risk of a head-on wreck. Unreliable watches could trigger a crisis. No one, in that case, could know where anyone was.

B. Language

Not to mince words, railroad men could be "blue." Jessie Fox remembered what she heard during 1913-1917 in her railroad home and at the Grand Trunk Western's Port Huron shops: "I don't know how many went to church."[268] David Brickey remarked: "A lot of the language was pretty raw and rough . . . you walked into a switch shanty, or the locker room--the language for the most part was . . . just like being in the military."[269] Certain railroaders claimed their job was "lubricated" by profanity. "The overwhelming bulk of adjectives and adverbs in this argot are either obscene or profane."[270]

At another level, the argot of railroading was "a workaday device for handling situations peculiar to the railroad . . . (it) is not only more picturesque but is more efficient than (ordinary English)."[271] To say "dynamite the air," an onomatopoeic phrase, is crisper than to say "bleed all the air pressure out of every car reservoir on a train suddenly." Moreover, technology affected this argot, introducing new hardware or practices which each called for a new term or use.[272]

C. Fanaticism About Time

Units of time--the day, the hour, the minute--dominated a railroader's life.[273] They found their way into almost every conversation. Clarence Gangluff remarked that one of the best things the Brotherhood of Locomotive Engineers did was to get rid of the 16-hour day.[274] Henry Truer, Jr., recalled that the 700-class Pere Marquette steam locomotives "could go 100-105 miles an hour."[275] Jessie Fox remembered that laborers "got seventeen cents an hour" in 1913 on the Grand Trunk Western.[276] Paul Cannehl's starting pay on the Michigan Central in 1928 was "five dollars and eighty cents a day for road work--eight hours or a hundred miles--or (the same) for (eight hours of) yard work."[277]

Schedules also harped on the subject of time. "Railroad time" was proverbial for something happening when expected. Communities could tell time by when the trains passed regularly, or by the noon whistle blowing at a railroad shop.[278]

Had there been no such fanaticism, innumerable accidents would have occurred--or every railroad would have ground to a halt. The drawback, however, was regimentation of the railroader in a surrender to the requirements of technology. "He (was) a slave to the clock."[279]

D. Seniority

Advancement on a railroad depended less on skill than on seniority. One's standing began from the day, hour, and minute one hired on. A man

could bid on a better job only when someone senior died, retired, quit, or transferred to another division.

To demonstrate reliability and thus achieve promotion, on-the-road crewmen had to work "the extra board." This meant that whenever an engineer, fireman, engine brakeman, conductor, rear brakeman or trainman failed to be available for duty, his replacement had to be "on call" day or night to do the job. Erratic employment ensued. Generally the most hated man on the railroad was the crew "caller," whose telephoning forced a man out of sleep or away from his family. But very senior men enjoyed the luxury of keeping steady runs and hours, which they clung to in spite of possible promotions. On the Cincinnati, Saginaw, and Mackinaw, engineer John Reardon, who kept one such run, was said to have been late only five times in twenty years. "(His) wife would have killed him."[280]

E. Union Practices

Nineteenth-century railroad working conditions were harsh. Train crews had to endure coal stoves in cars that fell over in collisions and set tinderbox seats and frames afire, link-and-pin couplers that chopped off fingers or killed many a brakeman caught in them, and the traditional, treacherous hand brakes (set by a wheel on the end of every freight car) that forced brakemen to scoot along thin running boards during many a blustery night, risking a misstep, or a cruel wind, when they could be blown to the ground to die.[281,282] These hazards, and others, remained in spite of technological advances until into the 20th Century. Safer technologies--baseboard steam heating in coaches, Janney automatic couplers, and Westinghouse automatic air brakes--were delayed or denied by railroad managements. Cornelius Vanderbilt, president of the New York Central, told George Westinghouse, "Do you pretend to tell me that you could stop trains with wind?"[283]

Railroad unions formed in reaction. The earliest began in Marshall, Michigan: the Brotherhood of Locomotive Engineers, originally a

few men meeting fervently in a caboose in 1863.[284] Craft after craft organized. The so-called "operating" unions were the engineers, the firemen, the conductors, the switchmen, and the trainmen.[285] So-called "non-operating" unions included the clerks, the maintenance-of-way men, the machinists, the blacksmiths, the sheet metal workers, the electricians, the carmen, the oilers, the telegraphers, the signalmen, the dispatchers, and the yardmasters.[286] As in an army, "non-operating" unions outnumbered the "operating" ones. National statistics demonstrate this. In 1944, the total membership of the "operating" unions was 443,300; not long afterwards, in 1950, total "non-operating" union membership was 760,000.[287] Overall, though, as technology advanced, as the Diesel locomotive replaced the steam engine, union membership fell. Railroad employment also fell. Again, national and state data give the trend:

Table 5: Railroad Employment, 1929-1975[288]

Year	Number of Railroad Employees, US	Michigan co. (last steam ops.)
1929	1,686,769	
1939	987,943	
1950	1,220,784	Ann Arbor R.R. (1950) Pere Marquette Ry. (1951) New York Central (1954)
1955	1,058,216	
1960	780,494	Grand Trunk Western (1960)
1965	639,961	
1970	566,282	
1975	487,789	

By 1961, no steam locomotives worked in Michigan.

Despite, or because of, a shrinking work world and antagonistic employers, railroad unions could be very militant. National railroad strikes in 1877, 1922, and during 1946-1947 coincided with economic depressions or periods after world wars (when wages had been frozen); these and lesser strikes affected Michigan.[289] Colorful figures in the union movement supported certain Michigan strikes, like the firebrand

agitator Mary Harris "Mother" Jones. She walked a picket line in Saginaw in 1922.[290]

All this would suggest considerable union solidarity. Unfortunately, in the face of strong managements, absentee ownership, and "intra-organizational friction," Michigan railroad unions had strife.[291] A 1942 observer noted problems of the Michigan locals: "'Overlapping interests, jealousies, and . . . frequent conflicts.'"[292] Moreover, the less skilled a trade, the less clout a union had. The Brotherhood of Maintenance of Way, said Ralph Antcliff, was "very ineffective--section men (could hire) in--kind of a weak union," adding that this union had "no closed shop until the 1940's."[293] The International Association of Machinists, according to Truer--a shop steward for it--on one occasion could not prevent a man being fired when he took a day off to get married.[294] And in several cases one union refused to respect another. The national strike of 1922 collapsed in Michigan, as elsewhere, when "engineers, firemen, road people broke it for machinists."[295] Then, certain unions were transitory. The Brotherhood of Railroad Telegraphers gradually vanished as advancing technology, the teletype, the telephone, and radio rendered it obsolete.[296]

Nepotism and "coziness" served to "cushion" labor-management relations. The Pere Marquette variety was much like other railroads:

> (The) railroad was a family . . . they done things together . . . they lived usually in the same areas. The superintendent maybe came up as an apprentice boy with six other of the apprentices . . . If he caught one of those guys doing something, he'd reprimand him, give him ten days off or something . . . very seldom would they fire him.[297]

"Accommodations" served further to tame the unions. On the Pere Marquette, Truer recalled:

> There was so many jobs that if a guy didn't work out in one spot, he'd work out in another . . . (in) steam engine days, there was coal to be put up(,) sand to be dried and (fed into the sand tower,) there was cinders to be shoveled(,) snow to be shoveled(,) pits to be cleaned in the

> roundhouse(,) helpers for boilermakers . . . machinists' helpers--I don't think they ever got rid of anybody . . . you had to be really, really in a big problem if they got rid of you.[298]

Union membership could excuse tardiness, absenteeism, carelessness, and drunkenness--not universal, but common enough to be subjects of many anecdotes and jokes. The only inexcusable sin (a constant temptation) was theft. A railroad was always moving someone's property, and to steal was to violate the trust which underlay the whole system. Most respected this. Gangluff angrily rejected "a brand new pair of shoes" one of his brakemen had abstracted from a boxcar.[299] But one railroad maintained 35 policemen in 1940 to staunch "breaking and entering, and pilferage," among other things.[300]

F. Racial and Gender Discrimination

Railroaders discriminated thoroughly and repeatedly. They firmly believed that minorities made wonderful menial workers. Afro-Americans had the chance to get only a few railroad jobs, and those were lowly: car cleaner, "butcher," Pullman porter, cook, or dishwasher. (See Figure 14.)

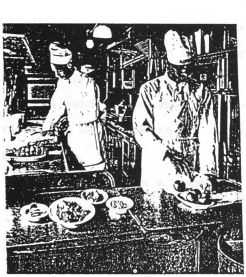
Supposedly as some form of compensation, the Pullman porter had a kind of distinction for whites. He featured in many anecdotes and purple prose:

> The Pullman porter has ridden a long way in the American legend. His name was George or Fred or Henry at the whim of the passenger . . . he was an American institution. A man of infinite resource, limitless guile and the patience of Job. . . .[301]

That glorification did not offset "the low wages, long hours, lack of adequate rest on trips, lack of bargaining power, and job insecurity in the porters' work . . . their 11,000 miles of travel per month usually meant 400 hours, excluding preparatory time and time spent (in) terminals."[302]

The most famous Michigan Afro-American to take a railroad job, "butcher" Malcolm X, poured scorn on the whole state of affairs:

Figure 14: Afro-American Railroaders (Beebe; Santino)



Note the letter D on the sole of the boot. Porters often identified footwear in such a way to allow them to shine more than one pair at a time. *Courtesy of the Library of Congress*

Porters smiled when performing their service role, but when they were "offstage" they showed signs of weariness and strain. *Courtesy of the Library of Congress*

> Negroes had been in dining car service as much as thirty and forty years . . . (but it) didn't take . . . a week to learn that all you had to do was give white people a show and they'd buy anything you offered them . . . the dining car waiters and Pullman porters knew it, too, and they faked their Uncle Tomming to get bigger tips.[303]

Discrimination also extended to Afro-American travelers. Seating accommodations were segregated--and could be irregular. After 1915, Northern industries began to run short of white workers. "Labor recruiters (promised) high wages . . . trains were backed into Southern cities and hundreds of Negroes were gathered up in a day . . . and whirled away to the North."[304] Some reached Port Huron, as Helen Jones recalled:

> When I was a young girl . . . my mother was a member of the School Board in Port Huron . . . she heard from the principal of the school at the (area) known as South Park that workers had been brought in, by boxcar, to work in the Holmes Foundry . . . their condition was quite pitiful, because it was cold weather (November) . . . the people were still in their summer clothing . . . blacks, they were . . . she was very, very upset. So was the principal of the school . . . Because they saw what condition the children were in . . . whole families were brought in boxcars . . . (that was) between 1924 and 1928.[305]

Constitutions for the railroad brotherhoods abetted discrimination by limiting membership to white males, and did so from the first. Echoing "conventional assumptions about the inferiority of the Negro," the Brotherhood of Locomotive Engineers shut out Afro-Americans in 1863, followed by the Order of Railway Conductors (1868), the Brotherhood of Locomotive Firemen (1873), the Switchman's Mutual Association (1886), and the Brotherhood of Railway Trainmen (1890).[306,307] An 1898 "outburst" of invective in the brotherhood journals called Afro-Americans "immoral, untrustworthy, inherently vicious and indolent by nature."[308] The International Association of Machinists and the International Brotherhood of Blacksmiths refused to admit Negroes in 1921, and also in 1921,

Figure 15: View of a caboose interior, 1943 (Delano/Valle)

A conductor's caboose is his castle! While his long, slow freight rattles towards Clinton, the skipper busies himself with his waybills while the rear brakeman gazes off into the middle distance. Since these men hold a regular run they have the advantage of a permanently assigned crummy fully equipped with a coffee pot, a barometer, a purloined sign fraudulently advertising the presence of a dining car, and a few choice specimens of what was delicately referred to in those innocent days as "leg art". Who could ask for a more pleasant home away from home?

> strength . . . thus freeing the male helpers to concentrate on the more arduous and demanding jobs that abound in the shops.[317]

G. Occupational Safety and Health

Probably few railroaders knew they discriminated. They did as America did. Their concerns were more tangible, like maladies caused by the job. Road crews knew "irregular hours, irregular meals"--sometimes only coffee--"and (a) constant change of routine."[318,319] Vibration was inescapable. They probably knew what bus drivers did, an "excess of venous, bowel, respiratory, muscular and back disorders. . . ."[320] A generic ailment of cab crews was called "railroad spine."[321] Sam Chidester at one point, from lower back pain, was forced to wear a truss.[322] Quite probably, poor postures of freight train crews and poorly designed cab seats led to further pain.[323] Cab firemen usually had no seat backs at all.[324] And caboose crews, who rode a lightweight conveyance at the end of thousands of tons of freight, always felt a jerk when their train began rolling. When the "slack" in all the couplers "ran out," their caboose could shimmy with whiplash. "You had to know how to sit," said Webster Schweitzer.[325] Nonetheless, skull fractures happened when men did not brace themselves properly. And cabooses bore the nicknames "bouncer," "galloping goose," "cripple's home," "ambulance"--and "hearse."[326] Railroaders who endured and survived all these conditions, retiring in many cases with thirty, forty and even fifty years on the job, must have been very hardy, indeed.[327]

H. Legendary Status

There must have been some extraordinary reason to remain a railroad man. Perhaps it was the status society gave him as part of a mythology.[328] Say to anyone "the iron horse," "Casey Jones," "the brave engineer," "the Midnight Special," "the driving of the Golden Spike," or sing the song everyone knows, "I've Been Working on the Railroad," and certain heartstrings twang. "The romance of the rails" graced the

ailroader.[329] What could he not do? Almost certainly, and just as well, the challenge spurred on a railroad man. Engineer Clarence Gangluff told with satisfaction about one place he always bested:

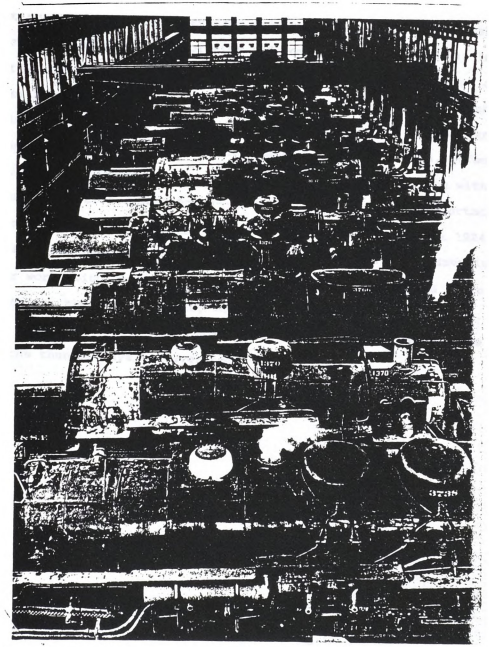
> We generally stopped at Clare for water. Then they'd go up over the hill . . . if you can get the engine and four cars over a certain point--where it can start onto a level there--you've got them. You know, one of them engines talked to you. When you get down to that fine point she starts grinding everything . . . she says, "Can't-make-it, can't-make-it, can't-make-it." And the old exhaust is talking to you there. Well, they get the four cars over. Then they say, "They-got-'em." When you got a little more high speed, you cut 'em up (open the throttle) a little bit, and she goes "tokerah-tokerah-tokerah-tokerah-tokerah-tokerah-tokerah," and away she goes.[330]

I. Pride

Surely a prime motive for the railroad man was pride: pride to be a center of attraction in the industry that annually carried millions of travelers and millions of tons of freight, that enticed children to play around the roundhouses, girls as well as boys, to gawk at engines steaming or arrayed in repair.[331] Indeed, the sight could be intricate and staggering. (See Figure 16.) In a kind of symbiosis, proud men lavished attention on proud locomotives before even routine runs. Orville Swick recalled:

> Your old steam men . . . loved their work, and they were interested in their work, had pride in their work . . . they'd come to work, a lot of those old engineers, an hour early. They'd get some (cotton) waste and they'd come out, they'd go up in the cab, they'd clean their gauge glasses off, their water column glasses, and they'd wipe the handles of the automatic and independent (brakes), the throttle and the reverser, they'd wipe the windows, one'd get his oil can out and he'd go down and look around, oil this up and that up, maybe get the hose . . . hose the deck down so it's nice and clean in the cab--this was on his time, before he'd go to work . . . a feeling down inside for (the) work (is what) they used to have. . . .[332]

Figure 16: View of a backshop, 1943 (Delano/Valle)



CONCLUSION

Arguably, therefore, railroad men in Michigan formed a subculture distinguished, and set apart from society, by its argot, clannishness, discrimination against minorities and women, dress, hardiness, legendary status, pride, and zeal for chronometry. Through their control of the steam locomotive--a unique kind of technology--they had a pronounced influence in Michigan during the first sixty years of this century. So broad were their effects on state commerce, communications, defense in wartime, energy consumption, recreation, and taxation--along with a range of negative consequences--that no other mode of transportation has yet matched theirs. Perhaps they were "indispensable," as a 1924 Michigan observer thought.[333] Certainly they brought great devotion to their work, with great pride. Most of them still recommend it to newcomers, though railroading in the Diesel age is far different. This they know, and most of them mourn. One of them said, sadly, "The joy and the thunder days are over now."[334]

GLOSSARY

GLOSSARY

A

abandonment -- I.C.C.-approved tearing-up of trackage
agent -- man in charge of a depot, or a representative for a railroad
air brake -- pneumatic system which continually stops a train
air horn -- signalling device on Diesel locomotives
air lance -- compressed air tool; cleans out flues
air line -- piping for Westinghouse air brakes
air scoop -- intake at bottom of firebox
Alemite gun -- pneumatic grease feeder for locomotives
appliance -- external device on a locomotive which uses steam
apron -- moveable steel plate; gangway floor
"Armstrong lever" -- lever moved by brute force
"ashcat" -- fireman
ashpan -- ash and cinder receptacle under firebox
ash pit -- receptacle for ashpan detritus; snare for the unwary
Awfully Long and Terribly Boring -- Amboy, Lansing, and Traverse Bay R.R.
Awfully Long and Terribly Bumpy -- Amboy, Lansing, and Traverse Bay R.R.

B

backhead -- cab end of boiler
backshop -- heavy locomotive repair facility
baggage car -- carries luggage, express freight; sometimes mail as well
ballast -- roadbed stone; can be cinder, limestone, or gravel
"banana train" -- special that hauls fruit
"beanery" -- eating house
"beanery queen" -- waitress
"belt line"/"belt" railway -- industrial trackage inside a city, sometimes owned by two or more railroads
"big-hole" -- to throw brakes into emergency stop
"big hook" -- steam crane
blower -- auxiliary air draft, released up a smokestack
blowdown -- vent to flush sediment out of boiler bottom
boiler -- steam generation chamber of a locomotive
boilermaker -- master welder for boiler, firebox and flue work
"boilermaker's ear" -- occupational hazard in shops
"Book of Rules" -- compendium of rules, regulations and practices
booster -- steam-driven auxiliary engine for trailing truck
brakeman -- couples and uncouples cars; formerly applied brakes by hand
brakestand -- engineer's control for all train brakes
brake shoe -- asbestos clamp; business end of Westinghouse system
"brass" -- an official or officials
brotherhood -- one of the large railroad unions
"bug" -- telegraph key
bum -- a vagrant who wouldn't work, and mooched
bunker -- wood, coal, or oil compartment in a tender
bunk house -- sleeping quarters at a yard; sometimes a Y.M.C.A.
"butcher" -- on-board salesman of food, newspapers, etc., to passengers

C

cab -- control area of a steam locomotive
cab curtains -- canvas sheets that somewhat keep snow out of cab
caboose -- conductor's office and train inspection post at end of freight train
Cadillac and Flake City -- Cadillac and Lake City Ry.
"caller" -- summoner of crew replacements; a wretch
"captive" -- town or shipper with only one railroad as an outlet
car cleaner -- a menial employee who cleans up after passengers
car knocker -- car department employee; checks for troubles
"card" -- certificate of a job correctly completed
Catastrophe and Lost Cause -- Cadillac and Lake City Ry.
"cattle car" -- stock car for cattle
check valve -- one-way water valve into boiler
chief dispatcher -- senior dispatcher in a division
cinder - recalcitrant, partly-burnt clot of coal
cinder screen -- cinder catcher in smokebox
"civilian" -- a non-railroader
Class Repair -- scheduled maintenance; in various degrees
coach -- passenger vehicle
coal(ing) dock -- elevated coal bin for locomotives
"company notch" -- most efficient setting for throttle
conductor -- in charge of all of a train except locomotive
consist -- 1) train composition; 2) list of cars in a freight train
"cornfield meet" -- unexpected head-on collision of two engines
counterweight -- steel offset on a driving wheel for rod weight
"cowcatcher" -- pilot
crankpin -- link between driving wheel and side rod
crossbuck(s) -- X-shaped "Rail Crossing Road" sign at a grade crossing
crossing guard/flagman -- tries to prevent movement across grade crossing when a train passes
crossover -- switch from one track to another
crown sheet -- roof of firebox
cupola -- observation post in roof of caboose
cut -- passage for right-of-way dug through a hill
cylinder -- horsepower creation chamber; houses piston
cylinder cock -- vent for cylinder condensation

D

"deadheading" -- 1) riding free; 2) moving a coach empty
"deferred maintenance" -- planned tardiness in upkeep or repair
derail(er) -- stubby clamp; guides wheel off rail
derailment -- unexpected meeting of rolling stock with Mother Earth
"detainer" -- dispatcher
dining car -- site of many a passenger feast
dispatcher -- issued train orders
division -- subsection of territory and authority
"dope" -- 1) water treatment chemical; 2) hotbox coolant; 3) grease
(to) "double" (a hill) -- splitting a heavy train in half to get it over a hill
driving gear -- drive train of locomotive
driving wheel -- powering wheel of locomotive
"Dutch clock" -- coupling-speed recording device
"dynamite (the air)" -- release all train air, loudly

E

engineer -- locomotive driver; in charge of engine
"eminent domain" -- legal fiction created by Herman Melville's father-in-law, allowing railroads to build and run virtually unobstructed

E (cont'd)

excursion -- "special" train for sports fans, vacationers, etc.
express (business) -- priority, extra-charge freight; often L.C.L.
"extra board" -- process of relieving train crews; a curse

F

fill -- stone, sand, etc., dumped into lowland or swamp as base for tracks
firebox -- combustion chamber of locomotive
fire door(s) -- cover(s) for cab port into firebox
fireman -- tended locomotive fire; shared responsibility for water with engineer
flagman -- train crewman sent out from stopped train with flag or lantern to halt approaching trains
"flapjack" -- crown sheet
flatcar -- wooden, flat, rectangular bed on wheels for freight
flue -- water or heat pipe in boiler
footboard -- thin platform(s) attached to end of locomotive
forge room - blacksmith's smoky lair
"Form 19" -- common type of train order
friction bearing -- bronze cap atop journal; below engine frame
"fruit rush" -- series of "banana trains"
"fussy"/fuzee -- long-burning candlestick-shaped flare

G

gangway -- passageway between cab and bunker
gate -- counterweighted arm at grade crossing
gauge -- 1) pressure indicator in cab; 2) width of track between rail heads
"glad hand" -- end of air brake hose, shaped like a politician's extended hand
grab iron -- bar on side of car; a handhold
grade -- 1) slope of a railroad; 2) to flatten said slope
grade crossing -- place where public or private road crosses tracks
"go in the hole" -- be side-tracked to allow another train to pass
gondola -- open, rectangular car

H

hand brake -- manually-operated device for applying train brakes; slow
"haul the mail" -- run a train at high speed
"hayburner" -- steam locomotive
"head end" -- at or near the locomotive
"hearse" -- caboose
helper -- 1) junior assistant to a shopman; 2) assisting locomotive
"highball" -- 1) n. signalling device; 2) v. to accelerate; 3) v. to go hell for leather
hobo -- a vagrant who worked and roamed
hobo mark -- warning/informing symbol chalked on sidewalk, water tower, etc., by a hobo; originally from gypsies
"home road" -- engine or car moved only on the railroad that owns it
horsepower -- the energy one horse, if encouraged, will produce
hotbox -- overheated journal

I

"I.C.C." -- Interstate Commerce Commission
ice house -- storehouse for ice for air-conditioned passenger trains and refrigerated boxcars

I (cont'd)

injector/inspirator -- device that mixes tender water with boiler steam, then sends mixture on to check valve
"iron horse" -- steam locomotive; not strictly a railroader's term

J

"jerkwater" -- town with a water tower; a stop to take on water in such a place
"Johnson bar" -- reversing lever in cab
joint bar -- steel piece overlapping two meeting ends of rails
journal -- axle end; protrudes beyond wheel
journal bearing;/"brass" -- crown atop journal, below frame
junction -- place where two tracks cross
jungle -- hobo camp

L

Ladies' Auxiliary -- association of railroaders' wives
"L.C.L." -- less-than-carload amount(s) of freight
lagging -- asbestos magnesia insulation
"lightning slinger" -- telegrapher
"lightning-slinging"/"slinging lightning" -- telegraphy
line -- 1) n. a railroad track; 2) v. to align switch(es)
"local"/"peddler" -- freight train stopping in many small towns

M

main line -- primary route of a railroad
main rod -- link between driving wheel and crosshead
marker -- flag or lamp mounted beside bell to show type of train
marker lamp/light -- kerosene or electric lamp showing a white or colored light; mounted on both ends of train
master mechanic/"master maniac" -- chief shop mechanic
maul -- spike-driving hand tool
"meet" -- when (and where) two trains pass each other in opposite directions
merchandise time freight -- "special" with guaranteed delivery time
"Mexican Central" -- Michigan Central R.R.
"milk run" -- closely scheduled "local" that collects milk for market
"mixed" -- combination freight and passenger train
"Mulligan stew" -- hobo meal; frequently partly pilfered

N

narrow gauge -- track width less than standard gauge
"niggerhead" -- superheater manifold in roof of smokebox

O

"oil train" -- train of tank cars hauling only petroleum
"op" -- operator
operator -- tower or depot man; can be a telegrapher

P

"passing signals" -- relay of signals by hand motions, lantern waves, or flare waving from one crewman to another
passing track -- siding long enough for a whole train to "go in the hole"
"P Company" -- Pennsylvania R.R.

P (cont'd)

"petticoat" -- flared extension in smokebox on base of smokestack
piledriver -- steam-driven piling installer
pilot -- obstacle deflector at front of locomotive
"Pissing and Moaning" -- Pere Marquette Ry.
piston -- steam compressor and exploiter inside cylinder
platform -- area between tracks and depot
pony truck -- small, leading wheel-and-axle set(s) of locomotive
porter - sleeping car or platform attendant
power reverse -- pneumatic locomotive valve-timing device
private car -- non-railroad passenger car; usually lavish
prosser -- boilermaker's flue tool
"push pole" -- crude, dangerous switching device
pusher -- assisting locomotive

R

rail -- load-bearing track member; made of cast iron or steel
"railfan" -- railroad enthusiast; term is not always complimentary
"railroad spine" -- enginemen's illness or injury due to vibration, etc.
"railroad time" -- on or ahead of schedule
"rattler" -- freight train
"rear" -- at or near the caboose
receiver -- wretch appointed to liquidate a bankrupt railroad
re-railer/"re-railing frog" -- stubby ramp for wheel, when pushed or dragged, to regain rail
right-of-way -- railroad land that tracks run through
"road" -- a railroad
roadbed -- stone, cinders, sand, mud, etc. underneath tracks
rod/side rod -- steel bar linking driving wheel crankpins
roller -- boilermaker's flue tool
roller bearing -- tapered-pin device around journal, inside engine frame
roundhouse -- locomotive maintenance and storage building
"R.P.O." -- Railway Post Office car
Rule "G" -- prohibition against intoxication on, or well prior to, duty
Rule "M" -- "Expect movement any track, any direction, any time"
run -- scheduled train movement
runaway -- undisciplined and mobile running stock; a terror
"running board" -- gridway or plankway atop freight cars or locomotives
running track -- through track in a yard; not for storage

S

safe-end -- 1) n. short pipe welded onto flue during refueling; 2) v. to weld on such a pipe
safety factor -- theoretical pressure a metal can withstand before breaking
safety valve -- automatic vent for excessive boiler pressure
sand house -- storehouse for sand and pigeons
sand tower -- elevated, shaky supply tank for locomotives
sandbox -- chamber atop boiler; holds sand for traction
scale track -- track with scale for sand, coal, etc.
Schnabel car -- extendable, drop-bottom, high-tonnage flatcar
section hand/man -- track maintainer; worked a limited area
shop(s) -- repair facility
side-track -- 1) n. track beside main line; 2) v. to divert (to said track)
siding -- secondary track beside, and connected to, a main line
signal man/signalman -- installer and maintainer of signal equipment
"slack" -- play in couplers; back-and-forth slop

S (cont'd)

sleeping car -- overnight-accommodation car, with bunks, etc.
sling -- loop of cable
"slow order" -- 1) area of track repair or fault; 2) announcement of said area
smokestack -- exhaust pipe atop smokebox
snowplow -- ungainly spreader or dislodger of snowdrifts; usually pushed by one or more locomotives
"special" -- train not on the timetable
spike -- short piece of steel, shaped like a chisel with a wide head; secures rail to tie
"squirt house" -- air hose used to clean ashpan
standard gauge -- 4'8-1/2" width between rail head insides
stationmaster -- head of a station; sometimes a telegrapher
steam chest -- housing for valve
steam dome -- outlet for boiler steam; sits atop boiler
steam locomotive -- the noblest of all machines
"stemwinder" -- pocket watch
stepbox -- squat step for boarding/detraining passengers
steward -- chief of a dining car
stock car -- car for livestock
stoker -- steam-driven Archimedian screw; moves coal from bunker to firebox
"string" -- set of coupled cars
superheater -- auxiliary heating pipes; runs in and out of boiler flues; fed by, and feeds, "niggerhead"
superintendent - chief of a division
sweeper -- car cleaner or shop janitor
switch list -- paper detailing cars to be switched
switch shanty -- switchman's hovel
switcher -- short locomotive for yard duty
switching -- v. arranging or re-arranging cars
switchman -- switch operator; frequently an alcoholic

T

tank -- water compartment in a tender
tank car -- cylindrical car; holds liquids
"telltale" -- warning device above tracks near obstruction; warns brakemen to get off car roofs
telegraph key -- sending and sounding instrument; usually made of brass
telegrapher -- operator of a telegraph
tender -- spare fuel and water section of a locomotive; located behind cab
terminal -- large depot; end of many runs
"the wire" -- telegraph line
throttle -- engineer's control for steam leaving boiler
tie -- wooden connection between rails
tie plate -- flat piece of steel under rail, atop tie; secured by spikes
ton-mile -- one ton carried one mile
torpedo -- detonator warning signal; clamped to track
tower -- building for train and/or grade crossing control
track gang -- section men
trailing truck -- wheel-and-axle set under cab
train -- one or more locomotives, coupled or not coupled to cars, displaying markers
trainman -- on-board employee; maintains train cars
train order -- directions for a train crew
tramp -- a vagrant who wouldn't work, and roamed
trans-ship -- to pass freight along to another mode of transportation

T (cont'd)

traveling fireman -- itinerant inspector/instructor of young firemen
troop train -- wartime "special" for troops
try-cock -- small drip valve to check water level in boiler
turbogenerator -- steam-driven dynamo atop firebox
"turnip" -- large pocket watch
turret -- distributing manifold atop forebox; for appliances

V

valve -- admits and exhausts steam to and from cylinder
vestibule -- entry chamber on end of passenger coach

W

washout -- 1) n. a stop signal given by hand, lantern, fuzee or flag; 2) n. place where track has washed out; 3) v. to give a "washout" signal
washout plug -- small plug for cleaning point (in backhead, boiler bottom, etc.)
water column -- supply pipe for try-cocks in cab
water tower -- continually leaking, elevated supply tank for tenders
"watered stock" -- railroad securities overvalued by the crafty and bought by the credulous
waycar -- caboose
Westinghouse system -- pneumatic air brake mechanisms; for whole train
wheel lathe -- driving-wheel tire contour shaper
whistle -- all-too-audible steam-driven signalling and warning device
"wig-wag" -- grade crossing warning signal, with pendulum-paddle sign
to "wipe the clock" -- throw brakes into emergency stop
wiper -- yard menial employee who cleans locomotives with cotton waste and oil
wreck(ing) crew -- gang who clean up wrecks

Y

yard(s) -- tracks for switching, storage, and train functions

APPENDICES

APPENDIX A

MAJOR SHIPPERS/RECEIVERS OUTSIDE DETROIT ON THE PERE MARQUETTE RAILWAY DURING WORLD WAR TWO

Location	Firm(s)
Dearborn	Rouge Plant, Ford Motor Company
East Lansing	Michigan State College (later M.S.U.)
Lansing	Board of Water and Light
	Capitol City Wrecking Company
	Edgar Sugar House
	Fisher Body Division, General Motors Corporation
	Melling Forge Company
	Michigan Liquor Commission
	Michigan Refrigerating Company
	Motor Wheel Corporation
	Oldsmobile Division, General Motors Corporation
	Nash-Kelvinator Corporation
	Reo Motor Company
Grand Ledge	American Vitrified Products Company
	Grand Ledge Chair Company
	Grand Ledge Clay Products
	Grand Ledge Produce Company
Lowell	Central Michigan Office Chair Company
	Paul Kellog Company
	King Milling Company
	Lowell Lumber and Supply Company
	Lowell Manufacturing Company
	C. H. Runciman
Belding	Belding Co-op Company
	Warner Delmar and Sons
	Extruded Metals, Inc.
	Gibson Electric Refrigerator Company
	Murray Corporation of America
Greenville	Gibson Electric Refregerator Company
	Greenville Lumber Company
	Metzger's Dehydrated Foods, Inc.
	Ranney Refrigerator Company
Alma	Alma Trailer Company
	Allied Oil Company
	Home Lumber and Fuel Company
	Little Rock Lumber and Coal Company
	Midwest Refineries, Inc.
	Socony Vacuum Oil Company
	Petroleum Exchange
St. Louis	Hall Lumber Company
	Lake Shore Sugar Company
	Leonard Refineries, Inc.
	Michigan Chemical Company
	Michigan Salt Company
Grand Rapids	American Box Board Company
	American Excelsior Corporation
	American Seating Company
	Armour and Company
	Atlantic Commission Company
	J. A. Besteman and Company
	Certainteed Products Company

Location	Firm(s)
Grand Rapids	Columbia Storage and Transfer
	Consumers Gravel Company
	Ellis Brothers Company
	Elston-Richards Storage Company
	Extruded Metals Defense Plant
	Furniture Manufacturers Warehouse Association
	Grand Rapids Gravel Company
	Grand Rapids Stamping Division, General Motors Corporation
	Grand Rapids Wholesale Grocery Company
	Great A&P Tea Company
	Haskelite Manufacturing Company
	Ideal Seating Company
	Kroger Grocery and Baking Company
	Marvel Refining Company
	McInerney Spring and Wire Company
	Nichols and Cox Lumber Company
	C. H. Runciman
	Standard Builders and Supply Company
	Stiles, Inc.
Grand Haven	D. Baker Lumber Company
	Bastian-Blessing Company
	Canfield Manufacturing Company
	Challenge Machine Company
	Eagle-Ottawa Leather Company
	Oldberg Manufacturing Company
	Standard Sand Company
Muskegon	American Store and Equipment Construction Company
	Anaconda Wire and Cable Company
	Brunswick-Balke-Collander Company
	Campbell-Wyant-Cannon Foundry
	Central Paper Company
	Continental Aviation Company
	Continental Motors Corporation (aircraft engines)
	Fisher Iron and Metals Corporation
	Freuhauf Trailer Company
	Lakey Foundry and Machine Company
	Michigan Foundry and Supply Company
	Naph-Sol Refining Company
	Norge Corporation
	Nugent Sand Company
	Shaw-Box Crane and Hoist Division, Manning, Maxwell and Moore
	Shaw-Walker Company
	E. H. Sheldon Company
	Standard Oil Company
	W. Michigan Dock and Market Corporation
	W. Michigan Steel Foundry Company
Holland	Armour Leather Company
	Chris-Craft Corporation
	Doughnut Corporation
	Hart and Cooley Manufacturing Company
	H. J. Heinz Company
	Holland Co-op Association
	Holland Furniture Company
	Holland Furnace company
	Lake Shore Sugar Company
	National Biscuit Company (Nabisco)
	Smith Ag. Chemical Company
	Standard Grocery and Milling Company

Location	Firm(s)
Benton Harbor	Auto Specialties Manufacturing Company
	Benton Harbor Malleable Ind.
	Covel Manufacturing Company
	Dachel-Carter Shipbuilding Company
	Master Planters Company
	National Utilities of Michigan
	Remington-Rand, Inc.
	Rosenberg and Forbes Company
	Ross Carrier Company
	Superior Steel and Malleable Castings Company
St. Joseph	Auto Specialties Manufacturing Company
	Industrial Rubber Goods Company
	1900 Corporation
Traverse City	Farmers Co-op Association
	Grand Traverse Grocery Company
	M. Guiffre
	J. A. Hall
	Hannah and Lay Dock Company
	Lee and Cady
	The McGough Estate
	J. C. Morgan Canning Company
	Parsons Manufacturing Company
	Red Mill
	Traverse City Gas Company
	Traverse City Iron Works
	U. S. Navy Aviation
Petoskey	J. F. Burnett
	Michigan Potato Growers
	Petoskey Gas Company
	Petoskey Portland Cement Company
	Swift Company
	Wells Fuel Company
Monroe	Aluminum Company of America (Alcoa)
	Consolidated Paper Products
	Monroe Paper Products
	Monroe Steel Castings Company
	Ottawa River Paper Company
	River Raisin Paper Company
Grand Blanc	Fisher Tank Division, General Motors Corporation
Flint	A. C. Spark Plug Company, General Motors Corporation
	Buick Motor Defense Plant, General Motors Corporation
	Burroughs Elevator Company
	Central Wholesale Company
	Chevrolet Motor Division, General Motors Corporation
	Consumers Power Company
	DuPont
	Fisher Body Division, General Motors Corporation
	City of Flint
	Great A&P Tea Company
	Flint Waterworks
	General Foundry and Machine Company
	Hamady Brothers
	Alexander Jeffery
	Kasle Brothers
	M. & M. Warehouse
	Palace Travel Coach Company
	Standard Cotton Products Company

Location	Firm(s)
Flint	Standard Oil Corporation
	Woodmere Scrap Iron and Metal Company
Saginaw	American Agricultural Chemical Company
	Andrew Ellis Company
	Baker Perkins Company
	F. W. Carlisle Company
	Chevrolet Grey Iron Division, General Motors Corporation
	Chevrolet Aluminum Division, General Motors Corporation
	Chevrolet Service and Parts Division, General Motors Corporation
	Chevrolet Transmission Division, General Motors Corporation
	Saginaw Steering Gear Division, General Motors Corporation
	Columbia Mills
	Furstenburg Brothers
	Gratiot Fuel and Supply Company
	Hart Brothers
	E. Lenick and Company
	Lufkin Rule Company
	Michigan Bean Company
	Morris Nover Iron Company
	Smith Agricultural Chemical Company
	City of Saginaw
	Saginaw Furniture Shops
	Saginaw Malleable Iron Division, General Motors Corporation
	Saginaw Salt Products Company
	Saginaw Stamping and Tool Company
	Wickes Boiler Company
	Wilcox Rich Division, Eaton Manufacturing Company
Midland	Dow Chemical Company
Reed City	Pure Oil Company
	Simrall Corporation
	W. Michigan Consumers Company
Olivers	Leonard Pipeline Company
Manistee	Adams Paper Converting Company
	J. T. Baker Chemical Company
	Bulkey-Dunton Pulp Company
	Century Boat Company
	Falleen Drop Forge Company
	Filer Fibre Company
	Great Lakes Chemical Company
	Hardy Salt Company
	Manistee Iron Works
	Manistee Salt Works
	Miller Brothers
	Morton Salt Company
	Mulkey Salt Company
	Rademaker Chemical Company
	Ruggles and Rademaker Salt Company
	Sand Products Company
	Worcester Salt Company
Ludington	Dow Magnesium Corporation
Marysville	Dow Magnesium Corporation
Port Huron	Morton Salt Company
	Mulkey Salt Company
	Ruggles and Rademaker Salt Company

Location	Firm(s)
Port Huron	Mueller Brass Company
	Dow Magnesium Company
	Port Huron Times-Herald
	Port Huron Sulphite and Paper
	Dunn Sulphite and Paper
Bay City	Aetna Portland Cement Company
	Aladdin Company
	Bay City Shovels Company
	Chevrolet Motor Division, General Motors Corporation
	Dow Chemical Company
	Defoe Shipbuilding Company
	Industrial Brownhoist Corporation
	Michigan Pipe Company

Source: The Pere Marquette in 1945

APPENDIX B

SOME "CAPTIVE" COMMUNITIES ON THE PERE MARQUETTE, 1945

Baldwin
Bangor
Bart
Bay Port
Berry
Coleman
Croswell
Elmdale
Fowlerville
Grand Ledge
Grant
Harbor Beach
Hart
Kinde
Lakeview
Newaygo
Okemos
Palms
Paw Paw
Plymouth
Poland
Port Austin
Port Hope
Remus
Walhalla
Webberville
White Cloud
Williamston

Source: Michigan Division Timetable No. 2, January 1, 1981

APPENDIX C

TOXIC SUBSTANCES OF A RAILROAD SHOP
(from NIOSH and The Center for Disease Control, 1979)

Substance	Railroad Use	Reference Page
Acetone	Paint stripper	36
Acetylene	Shop torches	44
Ammonia	Cleaner; blueprint copiers	78
Arsenic	Wood preservatives	126
Asbestos magnesia	Lagging (insulation)	131
Borax	Soaps	1152
Coal dust	Locomotive by-product	370
Creosote	Tie, etc., preservative	370; naphthalene, 807
Ethyl alcohol	Shellac (element)	554
Gasoline	Motor fuel; parts cleaner	600
Hydrochloric acid	Flue cleaner	643
Kerosene	Cleaner; switch de-icer	702
Lead (paints)	Building coating	712
Lye	Locomotive water treatment	1006;1155
Phosphoric acid	Flue & superheater cleaner	937
"Red lead" paint	Building coating	lead tetroxide, 712
Roofing tar (pitch)	Roofs	370
Sand dust (silica)	Boiler sandblasting	1147
Silica	Graphite grease (element)	1147
Soda ash	Locomotive water treatment	1152
Soot	Locomotive by-product	vanadium, 1294
Sulphur	Grease (element)	1186
Sulphur dioxide	Locomotive by-product	1187
Waste oil	From various engines	see Appendix D
Zinc oxide	Paints (element)	1308

Source: Public Health Service, U.S. Department of H.E.W.

APPENDIX D

TRACE ELEMENT COMPONENTS OF WASTE OIL
in parts per million (ppm)
(from Yates, et al., 1978)

Element	Residual Oil (ppm)	Waste Oil (ppm) Mean	Maximum
Aluminum	----	67.1	2000
Barium	8	59.7	550
Boron	0.02	7.3	120
Cadmium	2	2.7	21
Calcium	24	316	6400
Chromium	6	7.9	45
Iron	15	333	5100
Lead	10	125	2000
Manganese	0.5	21	250
Magnesium	5	49.4	1000
Molybdenum	0.05	2.2	19
Nickel	120	6.4	44
Phosphorus	40	307	2500
Silicon	----	104	2500
Silver	20	0.10	0.60
Sodium	17.5	46.6	400
Sulphur	920	0.44	1.44
Tin	3	12.5	140
Titanium	----	6.5	110
Vanadium	1800	5.2	19
Zinc	0.8	219	5000

Source: Water Quality Division, Municipality of Metropolitan Seattle

APPENDIX E

INTERVIEWEE INFORMATION

Ralph Antliff, Grand Ledge: building and bridge gang, Pere Marquette Railway and Chesapeake & Ohio R.R.

David Brickey, Lansing: Diesel-age railroader; brakeman, Wabash R.R.

Howard Brown, Owosso: machinist, Ann Arbor R.R.

Leah Cannehl, Jackson: relative of railroader.

Paul Cannehl, Jackson: fireman and engineer, Michigan Central R.R. and New York Central R.R.

Irene Chidester, Grand Rapids: relative of railroader.

Sam H. Chidester, Grand Rapids: steam shovel repairman, fireman, and engineer, Pere Marquette Ry. and Chesapeake & Ohio R.R. Deceased.

Herschel Christensen, Grand Rapids: fireman, engineer, roundhouse foreman and engine inspector, Pere Marquette Ry. and Chesapeake & Ohio R.R. Deceased.

Jessie Fox, Port Huron: stenographer, Grand Trunk Western Ry.; relative of railroader.

Clarence Gangluff, Saginaw: fireman and engineer, Pere Marquette Ry. and Chesapeake & Ohio R.R. Deceased.

Russell J. Harrison, Lansing: policeman, Pere Marquette Ry. and Chesapeake & Ohio R.R.

Clyde Hart, Haslett: section man and section gang foreman, Grand Trunk Western R.R. Deceased.

Alice M. Lawrence, Traverse City and Old Mission: relative of railroader.

Gale R. Leach, Flint: car department and wrecking gang crewman, Pere Marquette Ry. and Chespeake & Ohio R.R.

Wallace Luckado, Okemos: telgrapher and agent, Florida East Coast Ry. and Grand Trunk Western R.R. Deceased.

Webster Schweitzer, Croswell: freight brakeman, Grand Trunk Western Ry. and Grand Trunk Western R.R.

Orville J. Swick, North Street: machinist-electrician, Pere Marquette Ry. and Chesapeake & Ohio R.R.

Henry Truer, Jr., Grand Rapids: machinist, Pere Marquette Ry. and Chespeake & Ohio R.R.

Clarence M. Vicent, Baldwin: section man and wrecking gang crewman, Pere Marquette Ry. and Chesapeake & Ohio R.R.

Frank Warden, East Lansing: track worker, laborer, and electrician, Pere Marquette Ry.

END NOTES

END NOTES

[1]Orville J. Swick, interview, 5 January 1991.

[2]See Charles Hirschfeld, The Great Railroad Conspiracy (East Lansing, Michigan: Michigan State College Press, 1953).

[3]Russell J. Harrison, interview, 6 March 1979.

[4]Henry Truer, Jr., interview, 19 January 1991.

[5]Robert N. Linscott, ed., Selected Poems and Letters of Emily Dickinson (New York: Doubleday, 1959) 90.

[6]George B. Abdill, This Was Railroading (New York: Bonanza Books, 1958) 112-113.

[7]Webster Schweitzer, interview, 21 January 1991.

[8]Ellis W. Hawley, The New Deal and the Problem of Monopoly (Princeton, N.J.: Princeton University Press, 1971) 228.

[9]Swick, interview.

[10]Data supplied by Michigan State University Archives and Historical Collections, Michigan State University, East Lansing, Michigan.

[11]Gale R. Leach, interview, 9 January 1991.

[12]Pere Marquette Railway Company, The Pere Marquette in 1945 (Alderson, West Virginia: Chesapeake and Ohio Historical Society, Inc., 1990) 47.

[13]Rosswell J. Black, notebook (author's collection).

[14]Black, notebook.

[15]Clarence M. Vicent, interview, 29 December 1990.

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[17]Lawrence M. Sommers, ed., Atlas of Michigan (East Lansing, Michigan: Michigan State University Press, 1977) 148.

[18]Benjamin L. Reitman, Boxcar Bertha (New York: Amok Press, 1988) 290).

[19]Jessie M. Fox, interview, 21 January 1991.

[20]Fox, interview.

[21]Paul and Leah Cannehl, interview, 12 January 1991.

[22]Truer, interview.

[23]Harrison, interview.

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[25]J. C. Furnas, The Americans: A Social History of the United States, 1587-1914 (New York: Putnam, 1969) 682-683.

[26]Furnas, 678.

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[28]Sam H. Chidester, personal communication.

[29]S. Chidester, personal communication.

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[33]Pere Marquette Railroad Company, 46.

[34]Pere Marquette Railroad Company, 46.

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[37]William W. Potter, "Fifty Years of Michigan Progress," Historic Michigan, ed. George N. Fuller, vol. 2 (Dayton, Ohio: National Historical Association, 1928) 1005, 667.

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[41]The author learned these dimensions while working in Grand Trunk Western R.P.O. No. 9683, owned by the Michigan State Trust for Railway Preservation.

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[51]Love, 118.

[52]Author's collection.

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[54]Clarence Gangluff, interview, 9 February 1983.

[55]Gangluff, interview.

[56]S. Chidester, personal communication.

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[64]Dunbar, 178.

[65]Barnett, 1.

[66]Barnett, 86-87.

[67]Barnett, 108.

[68]Barnett, 115-116.

[69]Barnett, 129.

[70]Barnett, 30.

[71]Barnett, 150.

[72]Dunbar, 176.

[73]Dunbar, 176.

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[82]See Ramon F. Adams, The Language of the Railroader (Norman, Oklahoma: University of Oklahoma Press, 1970).

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[88]Story told to the author.

[89]S. Chidester, personal communication.

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[95]Glenn C. Gillespie, Michigan Criminal Law and Procedure with Forms, 2nd ed. (rev.), vol. 4 (Wilmette, Illinois: Callaghan, 1987) 136.

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[98]Frank N. Elliott, When the Railroad Was King, 2nd ed. (Lansing, Michigan: Michigan Department of State, 1988) 13, 20-21.

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[107]Jeffrey Orenstein, United States Railroad Policy: Uncle Sam at the Throttle (Chicago: Nelson-Hall, 1990) 64.

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[109]Hungerford, 131.

[110]Truer, interview.

[111]Frank Warden, interview, 30 April 1979.

[112]Warden, interview.

[113]Paul and Leah Cannehl, interview, 12 January 1991.

[114]Cannehl, interview.

[115]Cannehl, interview.

[116]Fox, interview.

[117]Hughes, personal communication.

[118]Harrison, interview.

[119]Harrison, interview.

[120]George M. Kober and E. R. Hayhurst, Industrial Health (Philadelphia: Blakiston, 1924) 239.

[121]Rodney Crawford, personal communication.

[122]William J. Purdie, personal communication.

[123]Oliver Jensen, The American Heritage History of Railroads in America (New York: Bonanza Books, 1975) 184-185.

[124]This rule has different official designations. Its unofficial name is "Rule M."

[125]Clyde Hart, interview, 19 March 1979.

[126]David Brickey, interview, 4 February 1991.

[127]David Jones, "You Done Her Right," Live Steam, 24:5 (May, 1990) 8.

[128]Purdie, personal communication.

[129]Schweitzer, interview.

[130]Jensen, 160-161.

[131]Irene Chidester, interview, 19 January 1991.

[132]Gangluff, interview.

[133]The author was riding in a Chesapeake and Ohio passenger train in November, 1969, at Lansing, Michigan. Two people drove a car into the side of one coach. Both died.

[134]I. Chidester, interview.

[135]Gangluff, interview.

[136]Paul M. Smith, ed., Locomotive Engineers Journal (Cleveland: Brotherhood of Locomotive Engineers, 83:10, October, 1949) 654-656, 712.

[137]Schweitzer, interview.

[138]David BruinsSlot, personal communication.

[139]Switch padlocks were not truly secure until a cylinder version was introduced in the 1980's.

[140]Hughes, personal communication.

[141]For years, "SAFETY FIRST" was stenciled around railroad shops and on locomotives. Some of the remaining cabooses on the Grand Trunk Western display this slogan.

[142]J. B. Osborne, Pere Marquette Locomotive Diagrams, Book No. 48 (Cleveland: Advisory Mechanical Committee, 1946) passim.

[143]Cy Taylor, personal communication.

[144]William Wilson, personal communication. Wilson, a Conrail engineer, told of a woman suicide whose head was found at the next town, atop a coupler.

[145]At Michigan State University, a female student named Handlesman was killed instantly by a Grand Trunk Western freight train passing Fee Hall. Her body was thrown three hundred feet.

[146]Andy Gras, personal communication.

[147]See also Charles Dickens's tale "The Signalman."

[148]Michigan Department of Transportation, 17.

[149]Michigan Public Utilities Commission, Seventh Annual Report of the Michigan Public Utilities Commission for the Year Ending December 31, 1925, 91.

[150]Mary C. Burnell and A. Marcaccio, Blue Water Reflections (Norfolk, Virginia: Donning, 1983) 81.

[151]Burnell and Marcaccio, 81.

[152]Fox, interview.

[153]Robert H. Wiebe, The Search for Order, 1877-1920 (New York: Hill and Wang, 1967) 185.

[154]Paul Wesley Ivey, The Pere Marquette Railroad Company (Lansing, Michigan: Michigan Historical Commission, 1919) 366.

[155]Barnett, 161.

[156]Freeman L. Hubbard, Railroad Avenue (New York: McGraw-Hill, 1945) 357.

[157]Hart, interview.

[158]Cannehl, interview.

[159]I. Chidester, interview.

[160]Gangluff, interview.

[161]Cannehl, interview.

[162]During its October 5, 1975, steam test, Pere Marquette locomotive 1225 sullied a clothesline one mile north.

[163]The forge room of the Ann Arbor Railroad at Owosso, Michigan, is still encrusted with soot.

[164]The Owosso, Michigan, backshop of the Ann Arbor Railroad drained into the Shiawassee River near it. The railroad, a major employer in Owosso, never had any complaints.

[165]Jane Jacobs, The Death and Life of Great American Cities (New York: Vintage, 1961) 257.

[166]In Lansing, Michigan, the Union Station, built by the Michigan Central and the Pere Marquette, took over a platted city street's right-of-way, according to the Lansing Assessor's Office.

[167]Wendell A. Sturges recalled how Small Acres Lane, in Okemos, Michigan, was permanently disrupted in 1930 when the Grand Trunk Western saw that US-16, a parallel thoroughfare, was sufficient--and removed the grade crossing on Small Acres Lane.

[168]Jacobs, 258.

[169]Jacobs, 258.

[170]Oxford English Dictionary, eds., The Compact Edition of the Oxford English Dictionary, vol. II, P-Z (Oxford: Clarendon Press, 1974) 114.

[171]Love, 11.

[172]Elliott, 27--a masterly implication: ". . . the (railroad's) truth was sometimes strained."

[173]Michigan Public Utilities Commission, First Annual Report of the Michigan Public Utilities Commission for the Year Ending December 31, 1919 (Lansing, Michigan: Wynkoop Hallenbeck Crawford Company, State Printers, 1921) 11.

[174]Ivey, 381.

[175]Ivey, 368.

[176]Ivey, 368.

[177]Ivey, 369.

[178]Ivey, 369.

[179]Ivey, 370.

[180]Ivey, 370.

[181]Ivey, 373.

[182]Ivey, 300.

[183]Ron Chernow, The House of Morgan: An American Banking Dynasty and the Rise of Modern Finance (New York: Simon and Schuster, 1990) 309.

[184]Ian S. Haberman, The Van Sweringens of Cleveland (Cleveland: Western Reserve Historical Society, 1979) 156.

[185]Edmund G. Love, personal communication.

[186]Love, personal communication.

[187]F. D. McHugh, "Is Concrete Better Than Cross-Ties?" Scientific American, July 1928, 54.

[188]McHugh, 54.

[189]S. Chidester, personal communication.

[190]S. Chidester, personal communication.

[191]Haberman, 135.

[192]Chernow, 309.

[193]Chernow, 325.

[194]National Bank of Detroit, Pere Marquette Railway Equipment Trust of 1941 (Detroit, Michigan: National Bank of Detroit, 1 June 1941).

[195]Chernow, 412.

[196]John L. Lewis, quoted in Michael Jackman, Crown's Book of Political Quotations (New York: Crown, 1982) 114.

[197]David Jones, "Lore of the Line," Locomotive and Railway Preservation, 1:2 (May-June 1986) 12.

[198]Robinson, interview.

[199]Michigan Public Utilities Commission, First Annual Report of the Michigan Public Utilities Commission for the Year Ending December 31, 1919, 25.

[200]Michigan Public Utilities Commission, First Annual Report of the Michigan Public Utilities Commission for the Year Ending December 31, 1919, 25.

[201]George Basalla, The Evolution of Technology (Cambridge, England: Cambridge University Press, 1988) 57.

[202]The first of the huge 1200-class Pere Marquette locomotives reached Michigan in 1937. Demonstrator #1211 was displayed in Detroit, Saginaw, Flint, Lansing, and Grand Rapids.

[203]See William F. M. Goss, Superheated Steam in Locomotive Service (Washington, D.C.: Carnegie Institution, 1910). The first grand argument for the use of superheaters.

[204]Osborne, 42-B.

[205]W. Neal Lewis, personal communication.

[206]S. Chidester, personal communication.

[207]Osborne, 30.

[208]Gangluff, interview.

[209]Orville J. Swick, personal communication.

[210]"Tell-tale" warning strings, meant to signal "no clearance ahead" to persons on freight car tops, could be hung too near a bridge. Those on the south side of the Lake Shore and Michigan Southern underpass below Lansing, Michigan's Michigan Avenue were only twenty feet away, justifiable only if slow-speed trains were the rule.

[211]Osborne, 33-A.

[212]Orville J. Swick, "Memories of an Old Railroader," David BruinsSlot, ed. (Flint, Michigan: n.d.) 1.

[213]Leach, interview, 9 January 1991.

[214]Ralph Antcliff, interview, 6 February 1991.

[215]Antcliff, interview.

[216]Hart, interview.

[217]Vicent, interview.

[218]Edmund Klein and Robert A. Schwartz, "Cancer and the Skin," Cancer Medicine, James F. Holland and Emil Frei III, eds. (Philadelphia: Lea and Febiger, 1982) 2064.

[219]Christine L. Oliver, et al., "Asbestos-related Disease in Railroad Workers," American Review of Respiratory Disease, 131:4 (April 1985) 500.

[220]W. J. Nicholson, et al., "Occupational Exposure to Asbestos: Population At Risk and Projected Morality--1980-2030," American Journal of Industrial Medicine, 3: (1982) 259-311.

[221]Howard Brown, interview, 1 April 1984.

[222]These men were named Pichiotino. Brian K. Osmer, personal communication.

[223]Also nicknamed "boilermaker's ear." John R. Glover, M.D., personal communication.

[224]David Jones, "Owosso Shops--The Way They Were," Project 1225, 63 (Spring, 1986) 3.

[225]Jim Macey, personal communication.

[226]Osborne, 42-B.

[227]Truer, interview.

[228]Truer, interview.

[229]Truer, interview; also, observations of the Ann Arbor Railroad backshop at Owosso, Michigan, and the Pere Marquette Railway backshop at Wyoming, Michigan, by the author.

[230]Jones, "Owosso Shops--The Way They Were," 3.

[231]S. Chidester, personal communication.

[232]Fox, interview.

[233]Harrison, interview.

[234]David Jones, "The Perilous Push Pole," Trains, forthcoming.

[235]Hubbard, 362.

[236]Story told to the author.

[237]Robinson, interview.

[238]Sam H. Chidester and Herschel Christensen, interview, 14 December 1978.

[239]Leach, interview.

[240]Hart, interview.

[241]Leach, interview.

[242]Brown, interview.

[243]Brown, interview.

[244]Leach, interview.

[245]For a modern case, see E. D. Fales, Jr., "Runaway engine on the main line!" Popular Science 179: (October, 1961) 127-137.

[246]Donald W. Hughes, personal communication.

[247]Tim Frew, Locomotives: From the Steam Locomotive to the Bullet Train (New York: Mallard Press, 1990) 32-33.

[248]Robinson, interview.

[249]S. Chidester, personal communication.

[250]Fox, interview.

[251]Robinson, interview.

[252]David Jones, "On the Line," Project 1225, 56 (Spring, 1974) 3.

[253]Robinson, interview.

[254]Robinson, interview.

[255]Sometimes not even then. The Great Lakes were seasonally traversed by railroad car ferries. See George W. Hilton, The Great Lakes Car Ferries (Berkeley, California: Howell-North, 1962).

[256]Henry Bosley Woolf, ed., Webster's New Collegiate Dictionary (Springfield, Massachusetts: G. and C. Merriam, 1981) 1150.

[257]Richard E. Sykes, "American Studies and the Concept of Culture: A Theory and Method," American Quarterly, 15 (Summer 1963) 258.

[258]R. Gordon Kelly, "Literature and the Historian," American Quarterly 26 (May 1974) 147.

[259]Warden, interview.

[260]W. Fred Cottrell, The Railroader (Stanford, California: Stanford University Press, 1940) 100-111.

[261]Ivey, 354. Car ferries, supposedly a short cut across the Midwest, were not reliable Michigan connections. The lakes froze annually. See Arthur C. Frederickson and Lucy F. Frederickson, Pictorial History of the C&O Train and Auto Ferries (Ludington, Michigan: Lakeside Printing Company, 1965) passim.

[262]Vicent, interview.

[263]Brickey, interview.

[264]Eugene L. Huddleston, Ph.D., personal communication. See also Brickey, interview.

[265]Schweitzer, interview.

[266]Leach, interview.

[267]S. Chidester, personal communication.

[268]Fox, interview.

[269]Brickey, interview.

[270]Cottrell, 106.

[271]Cottrell, 103.

[272]Cottrell, 103.

[273]Cottrell, 60-77.

[274]Gangluff, interview.

[275]Truer, interview.

[276]Fox, interview.

[277]Cannehl, interview.

[278]The Ann Arbor Railroad's backshop at Owosso Michigan, had an ex-ferryboat whistle, three feet long, on its roof to sound each noontime.

[279]Cottrell, 69.

[280]Love, 16.

[281]Brickey, interview.

[282]Jensen, 189.

[283]Jensen, 189.

[284]Dunbar, 102.

[285]Jacob J. Kaufman, Collective Bargaining in the Railroad Industry (New York: Columbia, 1954) 53.

[286]Kaufman, 53.

[287]Kaufman, 53.

[288]U.S. Congress, Office of Technology Assessment, An Evaluation of Railroad Safety (Washington, D.C.: Government Printing Office, 1978) 47.

[289]Jensen, 156-158; Truer, interview; Kaufman, 79.

[290]Gangluff, interview.

[291]Kaufman, 51.

[292]Twentieth Century Fund, Inc., How Collective Bargaining Works (New York: Twentieth Century Fund, 1942) 324.

[293]Antcliff, interview.

[294]Truer, interview.

[295]Truer, interview.

[296]Cottrell, 21.

[297]Truer, interview.

[298]Truer, interview.

[299]Gangluff, interview.

[300]Harrison, interview.

[301]Lucius Beebe and Charles Clegg, The Trains We Rode, vol. II (Berkeley, California: Howell-North, 1966) 838.

[302]Philip S. Foner, Organized Labor and the Black Worker, 1619-1981, 2nd ed. (New York: International, 1982) 177, 178-179.

[303]Malcolm X and Alex Haley, The Autobiography of Malcolm X (New York: Grove, 1966) 77, 75.

[304]Foner, 130, 131.

[305]Helen E. Jones, interview, 2 February 1991.

[306]Alan Brinkley, Huey Long, Father Coughlin and the Great Depression (New York: Vintage, 1983) 33.

[307]Foner, 103.

[308]Foner, 105.

[309]Foner, 155.

[310]Maurine W. Greenwald, Women, War and Work: The Impact of World War I on Women Workers in the United States (Westport, Connecticut: Greenwood, 1980) n.p.

[311]Lois Scharf, To Work and To Wed: Female Employment, Feminism, and the Great Depression (Westport, Connecticut: Greenwood, 1980) 16-17.

[312]Fox, interview.

[313]Edna Z. Emley Papers, Michigan State University Archives and Historical Collections, East Lansing, Michigan.

[314]I. Chidester, interview.

[315]Brickey, interview, quoting Elizabeth J. Andrus.

[316]Linda Niemann, Boomer: Railroad Memoirs (Berkeley, California: University of California Press, 1990) 42-43.

[317]James E. Valle, The Iron Horse at War (Berkeley, California: Howell-North, 1978) 238.

[318]Paul M. Smith, ed., Locomotive Engineers Journal (Cleveland: Brotherhood of Locomotive Engineers, 83:10, October 1949), outside back cover.

[319]Leach, interview.

[320]Donald E. Wasserman, Human Aspects of Occupational Vibration (Amsterdam: Elsevier, 1987) 21.

[321]Wallace Schroeder, D.C., personal communication.

[322]I. Chidester, interview.

[323]Wasserman, 22.

[324]Pere Marquette locomotive 1225 did not gain a fireman's seat back until 1982.

[325]Schweitzer, interview.

[326]Adams, 27.

[327]Paul M. Smith, ed., Locomotive Engineers Journal (Cleveland: Brotherhood of Locomotive Engineers, 83:10, October 1949) 696-699.

[328]Cottrell, 82.

[329]Cottrell, 83.

[330]Gangluff, interview.

[331]Alice M. Lawrence, personal communication.

[332]Swick, interview.

[333]Calkins, "Railroad Development in Michigan Since 1850," in Fuller, 663.

[334]Leach, personal communication, 9 January 1991; attributed to Frederick J. Steck by David BruinsSlot.

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