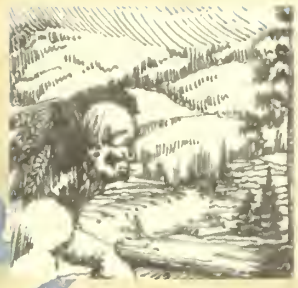
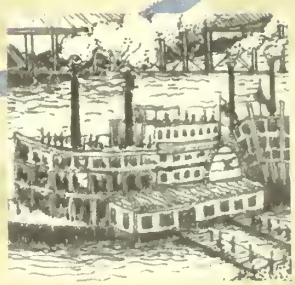
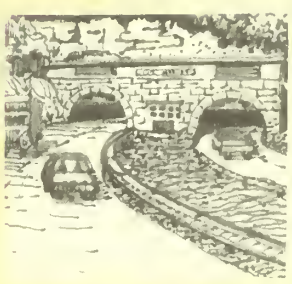
SPECIAL HISTORY STUDY

THE EVOLUTION OF TRANSPORTATION

IN WESTERN PENNSYLVANIA







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Special History Study

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The Evolution of Transportation in Western Pennsylvania

United States Department of the Interior • National Park Service • Denver Service Center

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MAPS

FIGURES

* Courtesy of Historical Collection and Labor Archives, Pennsylvania State University.

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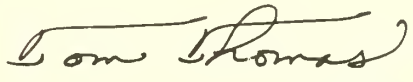
FOREWORD

The Southwestern Pennsylvania Heritage Preservation Commission requested the completion of a special history study of transportation in western Pennsylvania in November of 1992. The commission hoped that such a study would enhance an understanding of the motives for transportation development in the region, the evolution of transportation technology as it responded to western Pennsylvania's distinctive geography, and the impact of transportation development on the region's social, political, and economic history. A special study would provide a broad historical context to enhance and complement other planning efforts either currently in progress or those that may be undertaken in the future. The study would also provide additional data for the sites that interpret western Pennsylvania's history.

Due to time constraints, much of this work has focused on secondary sources. The study is currently organized in four segments that address early trails and roads, canals and river transport, railroads, and roads and highways. The breadth and complexity of this subject may require a different organizational format for later versions of the study. Much of the data in the third section on railroads was provided by the Department of Applied History at Carnegie-Mellon University. The examination of the technological aspects of railroading by Carnegie-Mellon University leaves room for some additional work on the railroads' impact on western Pennsylvania society and politics. A surprising dearth of secondary sources on the development of highways and automotive travel in the region creates a demand for additional research in this area.

No comprehensive study has been written on the subject of transportation within the western Pennsylvania corridor. Thus, this special history study is much more a first step than the definitive work on this region's important role in the development of American transportation.



Tom Thomas
May 1994

Figure 1: Daniel Boone Escorting Settlers Through Cumberland Gap. George Caleb Bingham, 1851-1852. *Courtesy of Washington University Gallery of Art, St. Louis, Missouri.*

INTRODUCTION

In 1851-52, the American artist George Caleb Bingham painted "Daniel Boone Escorting Settlers through Cumberland Gap." Bingham, a largely self-taught painter, favored images from American frontier life for his subjects. Although this work depicts a specific event, the artist almost certainly intended that the work serve as a metaphor for American western expansion.

The painting portrays a transcendent experience, as the lead members of the party pass from darkness into a warm light. Boone looks suitably grim, as befits a grizzled frontiersman still on guard against the lurking dangers of the wilderness. The mountains loom ominously on both sides, but a tree by the side of the trail leans away from the travelers, as though nature itself is yielding to the first passage of civilization. Rebecca Boone, Daniel's wife, appears as a vacuous Madonna-like figure.

This work gained in evocative quality what it sacrificed in accuracy. Bingham seems to have confused the journey to Goshen with the passage of the Virgin to Bethlehem, with Daniel Boone, of all people, playing Joseph.[1] Bingham makes it look all too easy, and as we know, the road for European expansion into the North American interior was often very rocky, indeed.

The painting clearly suggests an almost spiritual quality about America's western expansion that undoubtedly reflects the incentives of some individuals who turned to the "wilderness" to seek spiritual fulfillment. For the most part, however, decisions to move away from the relatively civilized confines of the eastern seaboard to the foot of the Appalachians and beyond were based upon hard-headed perceptions that the frontier held out the possibility for material gain, not abstract notions concerning spiritual enrichment.

Western culture traditionally has viewed the physical environment as a plastic, malleable resource that humans may reshape with impunity to suit their particular economic or social goals. Contrary to this perception, however, humans must also react to their surroundings and modify their actions according to the physical conditions, constraints, and opportunities confronting them. Humans are as much creatures of their environment as they are masters of it. But the human ability to modify their surroundings reinforces Marc Bloch's rhetorical question, "Is not man the greatest variable in nature?"

The history of western Pennsylvania provides excellent illustrations of the ways in which humans adapt their behavior to the demands of a landscape's specific character, even as they work to modify that landscape. A number of different cultures, both Native American and European, have adjusted to the region's exacting physical characteristics in order to exploit its rich and varied resources. Western Pennsylvania's strategic location has prompted bitter economic and political rivalry that on many occasions erupted into full-scale war. Again, these conflicts did not grow out of disputes over abstract philosophical concepts, but out of competition for control of the region and the profits to be gained thereby.

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1. The Virgin metaphor in fact did play a significant role in European perceptions of the occupation of the North American continent. See Henry Nash Smith, *Virgin Land*, 1970.

An understanding of the region's distinctive topography is essential to appreciating its impact on human history. Western Pennsylvania begins in the Ridge and Valley region, and incorporates most of the Allegheny Plateaus. The region's most prominent feature is the Allegheny Front, the eastern end of the Appalachian Plateau that runs from Pennsylvania to Alabama. This is the largest of the series of ridges that run roughly northeast to southwest through the southwestern corner of the state. The Allegheny Front forms part of the watershed separating the Susquehanna and Ohio drainage basins. These rivers drain the state to the Atlantic Ocean and the Gulf of Mexico, respectively. The awesome presence of the Allegheny Front has significantly shaped the course of human history in western Pennsylvania.

A number of important rivers continue to shape the region. The Juniata and the West Branch of the Susquehanna flow east to the Susquehanna. The Youghiogheny River joins with the Monongahela to drain the southwest corner of the state. The Allegheny and its major tributaries, the Conemaugh, French Creek, and the Kiskiminetas, drain the northwest corner of the state. The Allegheny and the Monongahela come together at Pittsburgh to form the Ohio River, one of the continent's major river systems. The valleys of these rivers provided some of the earliest corridors for human expansion into what is now western Pennsylvania.

Perhaps more than any of its other natural features, the Allegheny Front and the forks of the Ohio River have defined the history of western Pennsylvania. The three rivers have for centuries provided a gateway into the interior of the continent and the riches contained there. The Allegheny Front is the barrier that has blocked so many who have sought to control this strategic geographic point. The combination of opportunity and obstacle has been the catalyst for western Pennsylvania's evolution as an important transportation corridor in American history.

Western Pennsylvania and the forks of the Ohio are not the nation's only important east-west corridor. The Hudson and Mohawk River valleys in the north, the Cumberland Gap in the south, and other pathways join the eastern seaboard and the trans-Appalachian interior. However, the combination of features in the Pennsylvania Alleghenies sets the region apart and has helped create both regional and national history. The mountains and rivers of western Pennsylvania forced the region's various occupants to adapt to its geographic

constraints. Native-Americans of many tribes, Europeans, and Americans in turn have devised numerous methods of transportation in order to exploit the land and its resources.

Although the cultures and specific objectives of these various peoples have differed, the broad perceptions of the land and their reaction to it share more similarities than differences. The development of transportation in western Pennsylvania provides important insights into the essential human desire to establish some control over the environment. It illuminates the vital role of the state, whether on the federal, commonwealth, or local level, in creating transportation improvements, and to a remarkable degree, in directing the course of economic development. The region's history also offers important evidence of the impact that transportation networks can have on the evolution of politics and society. From trails to roads, to turnpikes and canals, to railroads and highways, the pattern has remained remarkably unaltered. Human activity and the landscape of western Pennsylvania have combined to form a distinctive chapter in American history.

I. The Origins of Transportation: Early Footpaths and Roads

> There was indeed in America a social frontier, a special place. It was not a place of confrontation of imagined ideal attributes. The force that created it was the common urge of persons from both societies to exchange goods, genes, and ideas.[2]

The debate over the role, or the very existence of the frontier in American history has recently been reawakened with renewed passion in the American historical community. Historian Frederick Jackson Turner's 1893 essay, "The Significance of the Frontier in American History," argued that America's adaptation to its western frontier fundamentally shaped the nation's character. The essay made a lasting impression on American historiography. Even critics who reject his thesis seemingly must come to grips with the concept of frontier, one of the most powerful metaphors in the American experience. The word is one of the most evocative in

2. Francis Jennings, *The Ambiguous Iroquois Empire: The Covenant Chain Confederation of Indian Tribes with English Colonies from its Beginnings to the Lancaster Treaty of 1744*, (New York: W.W. Norton and Company, 1984), 59.

the nation's lexicon. The perceived ability to tame and conquer frontiers in many minds is the quintessential American quality.

However, as the "frontier" evolved to assume greater symbolic significance in the national consciousness, it lost meaning as a real place. The frontier of the mind becomes the line dividing light and darkness, civilization and savagery, and therefore the advance of the frontier is seen in moral terms. Historians increasingly recognize that such an image obscures rather than clarifies our understanding of the complexities of the past.

Having said that, we must also recognize that the course of events in eastern North America in the 16th, 17th, and 18th centuries does exhibit certain characteristics of a frontier, i.e., a border between different countries or cultures. The frontier was not rigid, it wavered and shifted in all directions of the compass, but the word does serve to describe the dynamic points of contact between the numerous Native American tribes, Europeans of various nations, and the Americans descended from these peoples who eventually occupied the region. The crest of the Appalachian Mountains served on numerous occasions as the frontier between whites and native peoples. But as we will see, the political and economic realities of contact between these cultures rendered any static geographic line impossible.

The numerous points at which these cultures came together triggered far-reaching consequences for the history of North America. The early history of western Pennsylvania in particular is the story of contact and confrontation along frontiers, not just the commonly perceived frontier between East and West, that shifting line between European advance and Native American retreat. Frontiers in western Pennsylvania also divided north and south, serving as lines of demarcation between Native American tribal rivalries that continued unabated even as all tribes were attempting to come to terms with the rising tide of white expansion. But the dynamic political and economic events that shaped western Pennsylvania were not unique to that region alone. They had their roots in the complex interrelationships between Europeans and Native Americans that had been developing since commercial exchange began between the two cultures in the 16th century.

The potential for trade first stimulated white expansion and development all along the Appalachian crest. Europeans had traded with Native Americans long before the

establishment of permanent white settlements on the continent, and this trade only whetted the appetites of all concerned for expanded contact. Europeans and Native Americans were ready and eager to trade at almost all times, each for reasons that were clear to themselves, if unfathomable to their counterparts in the other culture. The commerce in furs, hides, and manufactured goods interjected a dynamic and unstable element in both European and Indian societies, and ultimately, helped undermine the ability of Native American cultures to resist white expansion.

Although this cross-cultural trade had existed since before either French, Dutch, or English settlements had been established in North America, the level of exchange escalated significantly as these nations established permanent settlements on the eastern fringe of the continent. France placed settlers at Quebec and Montreal in the St. Lawrence River valley in the first half of the 17th century.[3] In 1614, the Dutch established New Amsterdam,[4] and by 1624 the Dutch West India Company had constructed Fort Orange at the confluence of the Hudson and Mohawk rivers. Both the St. Lawrence valley and the Hudson-Mohawk corridor provided relatively direct access into the interior of the continent, the location of the richest fur territories, and the tribes who controlled them.

During this period, furs were the objective of virtually all European trading activities. The seemingly limitless ability of North America to produce furs and skins created the impetus for these first European settlements. The Dutch and French settlers were few in number and were traders, not trappers. It was essential, therefore, to establish contacts and make commercial and political alliances with the tribes who controlled the fur-producing lands, and the transportation arteries that connected the interior with the European outposts. The competition for control of the fur trade led to intense conflicts between the European powers that frequently erupted into full-scale warfare.

The impact of this trade on Native Americans was even more disruptive. Although the European market for furs was virtually insatiable, furs did not introduce a foreign element

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3. Eric Foner and John Garraty, ed., *The Reader's Companion to American History,* (Boston: Houghton Mifflin Company, 1991), 429.

4. George Brown Tindall, *America. A Narrative History,* (New York: W.W. Norton and Company, 1984).

into European culture. European manufactured goods, however, in their wide variety and relative technological sophistication, were radically different from the Native American technological resources. The fur trade also introduced Indian tribes into a market economy, which represented a dramatic social departure from their hunting and agriculture-based economies. The introduction of European goods, including metal tools, cloth, alcohol, and firearms, altered the development of native cultures and ultimately left them dependent on the Europeans who were supplanting them.

Guns almost certainly brought the most profound and revolutionary changes to the cultures of North America. Guns altered the hunting traditions of Indians, but more importantly, they had the potential of upsetting completely the political equilibrium of the continent. A tribe equipped with firearms could in most instances defeat any rival and become a dominant force in the increasingly tumultuous political arena of North America.

Each colonizing power in turn recognized the need for native allies in the competition for control of the fur trade. The Dutch from a very early point established cordial relations with the Mohawks, one of the five nations of the Iroquois Confederacy. The French entered into relations with the Huron and other Algonquin tribes along the St. Lawrence and the Great Lakes. Each provided its allies with firearms, and war between rival tribes became at once bloodier, though often less conclusive.

The political power that any tribe enjoyed from the military application of firearms was derivative; that is, they could only remain a force so long as they had access to guns, lead, and powder. As some chiefs of the Five Nations implored in 1711, "If Powder and Lead keeps so dear with you how shall we defend ourselves if attacked? With Bows and Arrows we cannot. Let us not want (for) Powder and Lead."[5] The trade between Indians and Europeans undoubtedly worked to the advantage of both, but the advantages for Native Americans generally were of shorter duration.

The Iroquois Confederacy and some of the more powerful Algonquin groups offer some exception to this depressing rule. The myth of the Iroquois in general, and the Mohawks in

5. Jennings, *The Ambiguous Iroquois Empire*, 81.

particular, was that of a people of almost supernatural ferocity, who exterminated rivals at will and held sway over most of the tribes on both sides of the Appalachians. The Iroquois took great pains to propagate this myth themselves. In reality, the Five Nations took their fair share of beatings and at one point at least faced virtual extermination themselves.

The Iroquois' greatest successes were in the diplomatic arena, not on the battlefield, and their political acumen allowed them to remain relevant to the growing European competition for North America when other Eastern tribes had been rendered politically impotent and displaced. The diplomatic achievements of the Iroquois held significant implications for the rival European powers and the future disposition of the continent, including western Pennsylvania.

By the latter part of the 17th century, the English had defeated the Netherlands and relieved it of the burden of its North American colonies. The New England colonies had already been competing with the French in the fur trade, and the English presence on the Hudson only intensified this rivalry. The English also inherited the Dutch alliance with the Iroquois, a critical element in establishing a presence in the interior of the continent. The Iroquois for their own part acquired a new ally of even greater potential power than the Dutch, and they acted quickly to follow up on the advantage.

By the middle 1600s, the fur territories of the eastern seaboard had been exhausted. The beaver populations of the Connecticut River valley had been all but wiped out and other river systems were seriously depleted. The lands west of the Appalachians, along the Great Lakes, in Canada, and the vast Ohio country of the West, (the Belle Riviere to the French) were still largely untapped. The Iroquois had earlier in the century fought, with disastrous results, a series of conflicts known as the "Beaver Wars." This conflict, with a variety of neighboring tribes, was intended to keep the Confederacy a viable factor in the trade network with the European powers. In the last quarter of the century, the Iroquois, this time with English arms and assistance, renewed the struggle to assert dominance over the tribes of the Great Lakes and the Mississippi tributaries who traded with the French. This is the conflict that exhausted the Five Nations and figuratively pushed the Confederacy to the wall.

The "Grand Settlement of 1701" that reached an accommodation between the Five Nations and the French allowed the Iroquois to retain their independence and political influence.[6] However, the Five Nations had learned their lesson about fighting wars to maintain a voice in the economic competition between the two remaining European powers in northeastern North America. Iroquois warfare and diplomacy would take a decidedly different tack after their brush with disaster in the Beaver Wars.

In the ensuing half-century, the Five Nations (after 1720, the Six Nations, with the addition of the Tuscarora of the Carolinas) positioned themselves, with remarkable success, as the fulcrum in the growing Anglo-French rivalry. Although both European powers could claim some credit for neutralizing the Iroquois power, on the other hand neither could predict with perfect confidence what direction the Five Nations could take in the ongoing imperial contest. Iroquois neutrality had the practical effect of dampening both British and French efforts to control the western territories that was the future of both the fur trade and the long-term colonial aspirations of the two empires.

By the middle of the 18th century, this rivalry had come to focus more and more on the Ohio country, specifically the headwaters of the river in what is now western Pennsylvania. Control of the confluence of the three rivers could give a power effective control of the entire drainage. For the Iroquois, control of the Ohio country could give them critical leverage to use against both European powers.

After their near defeat in the Beaver Wars, the Iroquois settled on a shift in their long-term political agenda. Obviously, continued warfare against the tribes of the Great Lakes and their French allies was not a very attractive proposition. However, warfare in some form was an essential element of their culture. Claiming hegemony over the lands of what became western Pennsylvania provided the Five Nations with three critical pieces of their foreign policy. First, effective control of this region provided a clear corridor through which they could pass to make war on their southern enemies, the Cherokees and the Catawbas. It also afforded them political dominance of the tribes living in the Susquehanna River valley, the Delawares and Shawnees, who provided a buffer between the Iroquois homeland and retaliatory raids from

6. Jennings, *The Ambiguous Iroquois Empire*, 209-210; Anthony Wallace, "Origins of Iroquois Neutrality: The Grand Settlement of 1701," *Pennsylvania History* 24 (1957), 223-35.6.

the south. The fact that the Pennsylvania tribes were frequently punished by vengeful Catawbas and Cherokees apparently was not a pressing concern to the Five Nations.

Finally, control of the headwaters of the Ohio and the establishment of peaceful relations with the western tribes made the Iroquois the middlemen in trade between the British and the "far Indians," the tribes of the Great Lakes. With peace restored, the Five Nations protected themselves from the level of devastation they had suffered in the Beaver Wars. They also became the conduit through which many western tribes received British manufactured goods and the British communicated with these traditionally French-allied Indians.[7] The Iroquois improved and expanded the network of foot trails that crisscrossed western Pennsylvania, running both east and west and north and south. This grid of trails facilitated commerce between East and West and also served as the warpaths between the Five Nations and their enemies in the South. These trails to a remarkable degree laid the foundation for the successive transportation systems that evolved in the region (see the Indian Paths to 1750 map).

The Iroquois claims that they also held political sway over the tribes of the West probably did not completely fool any of the parties involved in this political maneuvering, certainly not the tribes who had thrashed them frequently during the previous century's warfare. The French likewise were not totally intimidated by the military power of the Five Nations, after they and their allies had brought them to bay only a short time before. Clearly the British saw that the Iroquois claims of mastery over the western territories were more shadow than substance, but the British, unlike the other players in this game had a vested interest in supporting the Iroquois position. If the Iroquois claims of a western empire could be upheld, then British claims of patronage over the Iroquois gave the Great Britain some basis for attempting to establish a presence in the vast territories of the Ohio country.[8]

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7. This account of Iroquois objectives is based on a number of sources, including Jennings, *The Ambiguous Iroquois Empire*; Wallace, "Origins of Iroquois Neutrality"; and Fred Anderson, "War and Revolution in the Making of the American Republic, 1750-1794," vol 1: "Death and Taxes, 1750-1775," (unpublished manuscript, 1991). These narratives differ in their evaluation of the relative strength of the Iroquois Confederacy after the conclusion of the Beaver Wars and on the Five Nations' ability to serve as a check on French expansion. But they generally agree on the course and long-term objectives of Iroquois foreign policy.

8. Jennings, *The Ambiguous Iroquois Empire*, 10-17, and elsewhere.

There is no doubt that the British perceived the Iroquois as assuming some sort of client status within the Empire. A 1755 "General Map of the Middle British Colonies" (see map on page 15) includes the following legend concerning the region north of Lake Erie.

> The Confederates, July 19, 1701, at Albany, surrendered this their Beaver-Hunting Country to the English to be defended by them for the said Confederates, their heirs and successors forever. And the same was confirmed Sept. 14, 1726, when the Senecas, Caiugas, and Onondagas surrendered their Habitations from Cayahoga to Oswego, and Sixty Miles inland, to the same, for the same use.[9]

The same map contains an additional notation that neatly ties up the British perception of the pecking order among the various powers of the Ohio country.

> The Western League of Welinis (corruptly called Ilinois by the French) consisting of the Tawixtawis, Mineimis, Piankashas, Waniaxtas, Piques, Kuscuskes were seated till lately on the Ilinois River and Parts adjacent; but are all, except the last, removed to the Ohio and its Branches, by the express leave of the Confederates about 16 Years ago.[10]

This establishes the hierarchy pretty succinctly. The British are the patrons of the Iroquois, who are in turn the overlords of the western tribes, and by extension, the lands of the West as well. This is borne out by the stated power of the Iroquois to grant land to displaced tribes. Whether this accurately sums up the reality of western politics is less important for the British than the fact that it gives them a foothold in the Ohio country.

This neat formula certainly did nothing to convince the French to abandon their own claims to the lands of the Ohio valley. For both the French and the British at this time, the Ohio was important primarily as a tributary of the Mississippi. Both the British and French clearly perceived the importance of the Ohio as a corridor into the interior of the continent. For the French, particularly, an avenue to the Mississippi was essential to their long-term colonial aspirations. The vast potential of the riches of the lands drained by the Ohio began to play a larger role in the plans of both imperial powers.

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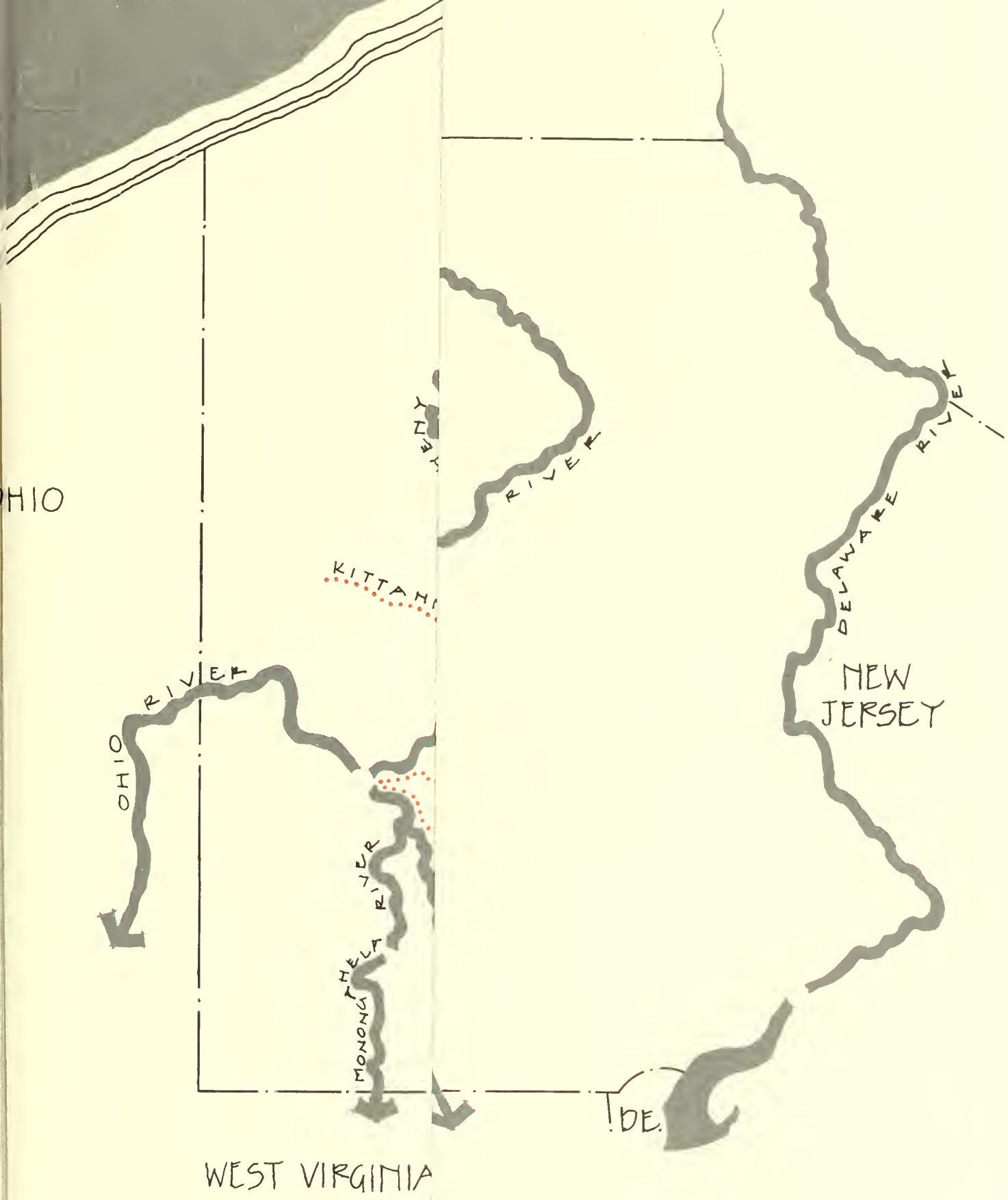
9. A General Map of the Middle British Colonies in America by Lewis Evans, 1755, Archives of the Pattee Library, Pennsylvania State University.

10. Ibid.



INDIAN PATHS

TO 1750

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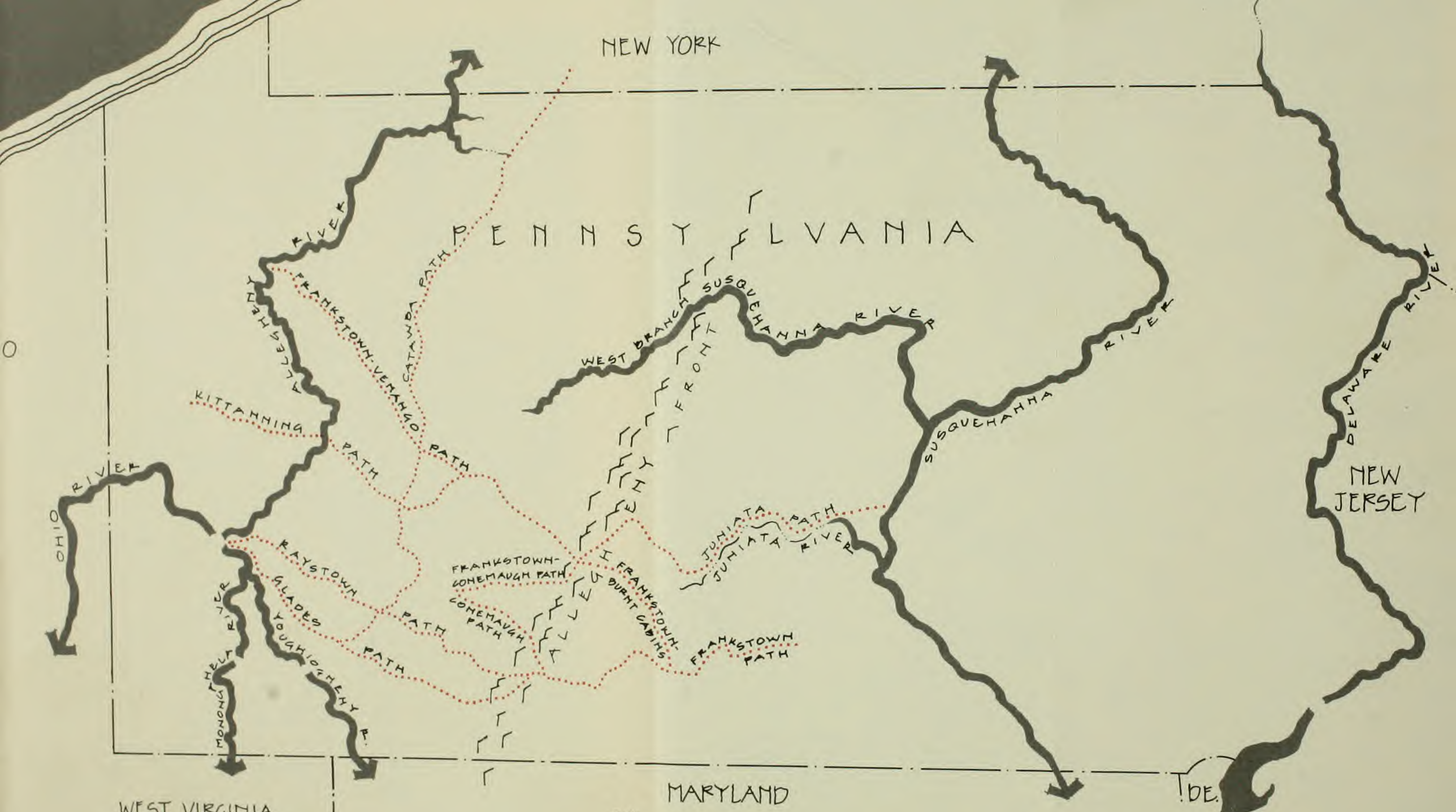

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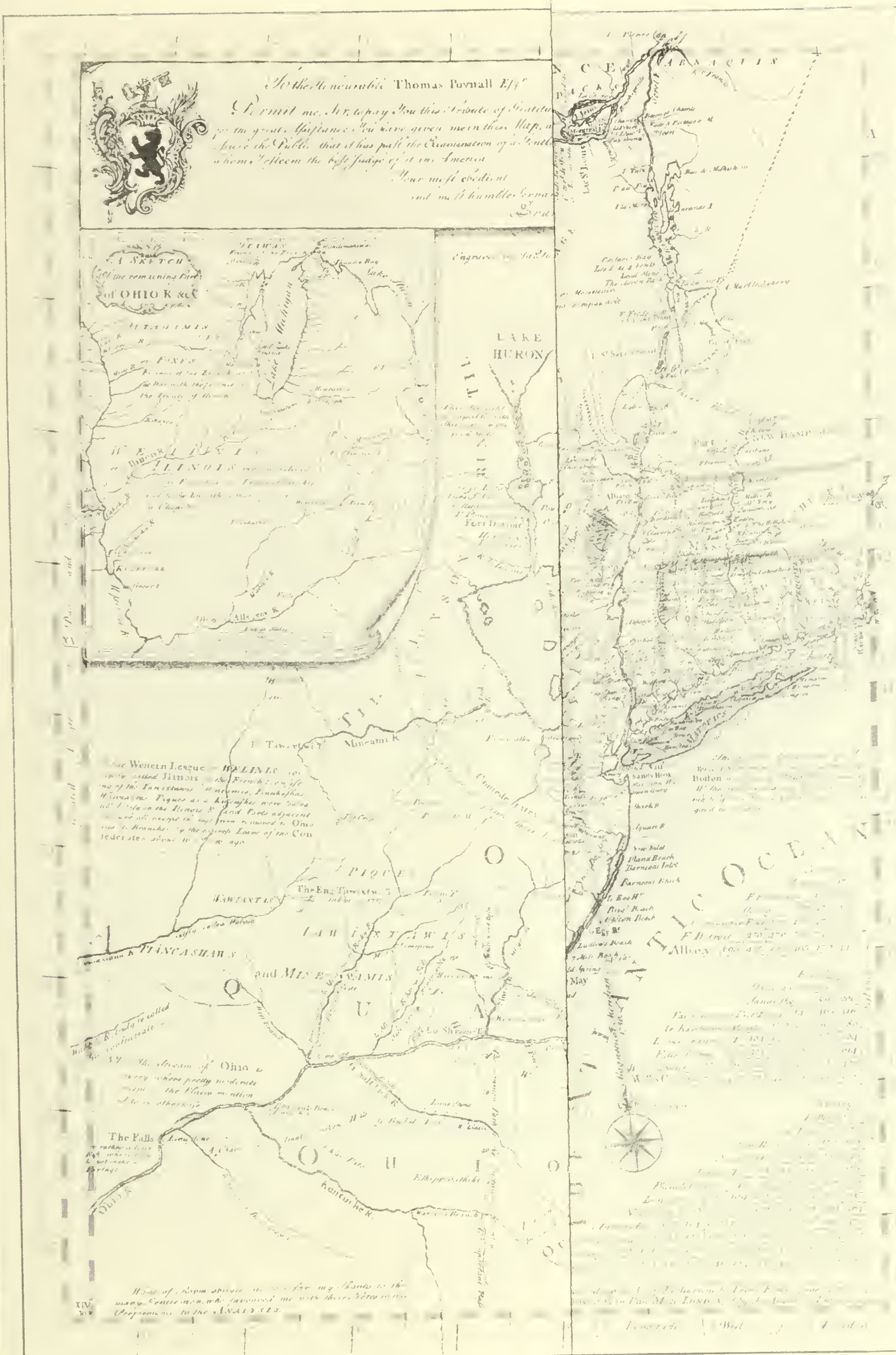

Thomas Pownall
A SKETCH of the remaining Part of OHIO R. &c.
LAKE HURON
Fort Detroit
The Western League
The Eng. Tawixtwi
The Falls
Sandy Hook
Barnegat Inlet
Barnegat Beach
Albany

A general MAP of the
MIDDLE BRITISH COLONIES, in AMERICA;
Viz VIRGINIA, MARILAND, DELAWARE, PENSILVANIA, NEW-JERSEY, NEW-YORK, CONNECTICUT, and RHODE ISLAND
Of AQUANISHUONIGY, the Country of the Confederate Indians
… the LAKES ERIE, ONTARIO and CHAMPLAIN,
And of Part of NEW-FRANCE
Wherein is also shewn the antient and present SEATS of the Indian Nations
By Lewis Evans 1755.
Thomas Pownall Esq.
LAKE HURON
LAKE ONTARIO
LAKE ERIE
Confederates
Mountains
Endless
Ohio
The Falls
NEW HAMPSHIRE
L.S. Francis
ATLANTIC OCEAN
Cape May
Albany
Part of NORTH CAROLINA
Explanation

The French and British motives for control of the western territories differed in detail but shared some similarities in their broad context. The French colonial development in North America by the middle of the 17th century was still modest, based in the main on the extractive fur trade. They had not established a colonial structure that even remotely resembled that of Great Britain. They did, however, control the St. Lawrence River valley, a vital artery for trade with the interior, and they had also established a string of settlements up the Mississippi valley as far as the Illinois River. The missing piece for their future on the continent was a linkage between the two valleys. The Ohio River and its tributaries filled this niche perfectly.

The British colonial policy was quite different from the French. Their extensive, well-populated colonies provided captive markets for British manufactured goods, as well as raw materials produced in a number of extractive industries, including naval stores and, of course, furs. One of the major problems faced in the American colonies was that they were almost without exception still confined to the immediate coastal areas. The future viability of the British colonies required crossing the Allegheny barrier and penetrating the lands in the interior. The completion of a linkage between the northern and southern holdings of the French obviously ran counter to British goals, as it potentially would leave the British colonies pinned on the east slopes of the Alleghenies. The same piece of real estate was the linchpin of both imperial powers' strategies. This fact made a clash almost unavoidable.

Again, however, one must bear in mind that the two empires' aspirations were grounded less in abstract notions of national glory than in the concrete material gains to be made. Certainly, for the British, establishing a monopoly in the fur trade loomed as a distinct possibility. The superiority of English goods potentially could drive the French out of the market. But the possibilities in speculation on western lands held even greater promise of wealth and excited the cupidity of both the English and colonists. For by this point, a number of the British colonies had developed sufficiently to pursue their own objectives in the West. The middle colonies of New York, Pennsylvania, Maryland, and Virginia all had grand visions for the future of the Ohio country, and naturally, their interests and their claims on these territories more often than not clashed.

New York and Pennsylvania both had long histories of involvement in the western trade, and this fact had significant implications for the development of these colonies and their relationship with England.

> Indian policy and the fur trade helped to define the relationship between England and the colonies of New York and Pennsylvania because fur of all varieties, but especially deerskin and beaver, had become an important concern of English economic interests, primarily for the production of clothing and hats.[11]

Even in Pennsylvania, whose tremendous agricultural productivity and developing manufactures gave it a relatively diverse productive base, the fur trade was a vital part of its economic base. Between 1720 and 1754, " . . . the value of fur as a percentage of Pennsylvania's total exports to London generally ranged from 30 to 40 percent."[12] As the century progressed, the colony and its proprietors became more involved in the acquisition of lands in central and western Pennsylvania by fair means or foul (more commonly the latter). This brought the colony into closer relations with the Iroquois, who coerced the land's Delaware and Shawnee tribes into yielding to white expansion, and also brought settlers from the east, who followed the Juniata River, the West Branch of the Susquehanna and other routes into the lands on both sides of the Allegheny Front.

Pennsylvania was not the only colony with aspirations in the country of the Ohio headwaters. A number of colonies laid claims of equal validity, which is to say no validity at all, on western lands. Pennsylvania, Virginia, and Maryland traders began to probe into the Ohio country, all posing threats to French aspirations in the region. The combination of increased competition in the fur trade and in western lands for speculation and development created a new dynamic in the West that further destabilized relations between France and Great Britain.

By the late 1740s, all three colonies were probing deeply into the country drained by the Ohio and its tributaries. King George II of England chartered the Ohio Company, a speculative

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11. Stephen H. Cutliffe,"Colonial Indian Policy As a Measure of Rising Imperialism: New York and Pennsylvania, 1700-1755," *Western Pennsylvania Historical Magazine* 64 (July 1981):239.

12. Ibid., 254.

venture, in 1747. The company received charters first for "60,000 acres on the Potomac . . . and on the branches of the Youghyoughane (sic) and Monongagely (sic)" and later for "200,000 acres to be laid out from ye branches called Kiskamansetts (sic) and Buffalo creeke" (along the Allegheny north of the future site of Pittsburgh).[13] The company also applied for grants of "ten thousand or more acres . . . at or near a place called Raystown (Bedford) on the Juniata . . . fifteen or twenty thousand acres on Lowelhaning (sic) and Kiskamonito (sic) Creeks (Saltsburg) . . . (and) four thousand acres at a place called the three forks of Youghogana (sic)."[14] Clearly, "the gentlemen of the Ohio Company sensed early the strategic sites of the region."[15] In 1752, the Ohio Company employed Thomas Cresap and Christopher Gist, two experienced frontiersmen, traders, and land speculators, and Nemocolin, a Delaware Indian, to mark a path from the company post on Wills Creek to the Monongahela River. This 80-mile path (also known as Nemocolin's Path) established the shortest portage between the Potomac and the Monongahela rivers.

The Ohio Company's rivals in Pennsylvania suspected that the principals of the company had put forward grand designs for their western encroachments in order to attract the support of the British ministry. Rev. Richard Peters, Pennsylvania's provincial secretary, reported to Thomas Penn "that vile fellow Cresap"[16] had suggested a scheme for Virginia to establish trading houses at Allegheny. He also claimed that Thomas Lee had proposed a plan to the British ministry to erect forts on the Ohio River "as if thereby all the country might be secured to his Majesty up to the Mississippi River."[17]

The British crown in fact granted the company its 200,000 acres charter in the belief that it would be "a proper Step towards disappointing the views and checking the encroachments of the French by interrupting part of the communications from their Lodgements upon the

13. Alfred P. James *The Ohio Company. Its Inner History* (Pittsburgh: University of Pittsburgh Press, 1959), 10.

14. Ibid., 50.

15. Ibid., 51-2.

16. Ibid., 13.

17. Ibid.

Great Lakes to the River Mississippi."[18] It would, if carried out, have gone far in achieving this objective. But increased colonial development had a more immediate and unforeseen consequence. It motivated the French to cement their hold on the Ohio and blunt any further British incursions west of the Alleghenies. The colonial actions and rapid French response paved the road to the Seven Years' War, the "Great War for Empire" that began in western Pennsylvania.

> The strife that armed all the civilized world began here.[19]

In 1753, the French constructed Fort Presque Isle, on Lake Erie, near the present site of Erie, Pennsylvania, and Fort Le Boeuf, at the headwaters of French Creek, a major tributary of the Allegheny River. These two forts clearly signalled French intentions to establish a presence along the Ohio itself and to forestall further British encroachments. The French Governor General, the Marquis Duquesne, planned an expedition for the following year, to construct a fort at the forks of the Ohio. British authorities found reports of increased French activity in the north very disquieting. Virginia Lt. Gov. Robert Dinwiddie, politician and avid land speculator, sent a very young George Washington on a mission to request officially that the French decamp. While on route to Fort Le Boeuf, Washington noted that the forks of the Ohio were "extremely well situated for a fort."[20]

Washington traveled from the forks north to the Great Lakes on the Venango Path, an Indian path that was "the lifeline to the forks of the Ohio for the masters of the Upper Allegheny, French Creek, and Lake Erie regions, successively Indian, French and British."[21] The French told the Virginian, politely but firmly, that they had no intentions of vacating their holdings.

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18. Cutliffe, "Colonial Indian Policy," 261.

19. Francis Parkman, quoted in Donald H. Kent, "The French Advance into the Ohio Country," *The Western Pennsylvania Historical Magazine*, Fall-Winter (1954-55), 136. This statement contains some hyperbole that one might expect from an Anglo-Saxon-oriented historian writing during the height of European imperialism. Obviously, the whole civilized world was not engaged in this conflict. For Parkman, Europe probably was "the whole civilized world." In which case, his statement hits closer to the truth. Most of the great powers on the continent fought in the Seven Years' War, a conflict that spanned three continents.

20. Donald H. Kent, "Young Washington in Pennsylvania," *Historic Pennsylvania Leaflet No. 13.* (Pennsylvania Historical and Museum Commission, Harrisburg, 1962), 17.

21. Niles Anderson and Edward G. Williams, "The Venango Path As Thomas Hutchins Knew It," *The Western Pennsylvania Historical Magazine*, January 1966, 1.

The next year, a large French force drove a small English party from their stockade at the three rivers and erected Fort Duquesne in its place, cementing their hold on the region.

Lieutenant Governor Dinwiddie had already responded to the news of a French challenge to the British presence at the forks. He dispatched a small military force under George Washington to support the party at the three rivers. On May 24, Washington established a camp at a clearing called the Great Meadows. A few days later, his Iroquois scouts informed him that a French force was encamped nearby. Washington's Iroquois allies led him and a portion of his command to a small glen approximately seven miles away. Here, Washington's troops surprised and destroyed the small French force under the Ensign Joseph Coulon de Villiers, sieur de Jumonville.[22]

Washington fell back to the Great Meadows camp, where he and his troops constructed a pitiful stockade, graced with the dispirited name of Fort Necessity. After an abortive advance against Fort Duquesne, Washington returned to his fortifications, such as they were.[23] Here he was defeated in turn by Jumonville's forbearing brother, Capt. Louis Coulon de Villiers. De Villiers's mixed force of French regulars, Canadian militia and Indian allies overwhelmed Washington's demoralized and exhausted men and forced their surrender on July 3, 1754. De Villiers allowed Washington and his surviving troops to retreat the following day with their honor and their heads intact, which was more than could be said for his brother.

This expedition's humiliating defeat led to a full-scale assault in 1755 by a large force of British regulars and colonial units under the command of Maj. Gen. Edward Braddock. The General arrived in the colonies to coordinate an ambitious three-pronged campaign against

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22. Richard White argues persuasively that Washington's guide, the Iroquois Tanacharison, had compelling reasons of his own for precipitating a conflict between France and England. Such a war would alleviate the growing French and Algonquin pressure that was eroding his own political position in the west. First, the chief informed him that Jumonville's force was poised to attack, when it almost certainly had been sent on a reconnaissance and diplomatic mission. After the battle, Tanacharison killed the wounded Jumonville with his tomahawk, a personal and grisly rejection of French influence on the upper Ohio. This chief, and not Washington, dictated the course of these events. Also in Fred Anderson, "War and Revolution in the Making of the American Republic, 1750-1794," 53-56.

23. Fred Anderson in his unpublished manuscript argues persuasively that, after the fight at Jumonville Glen, Washington fully intended to take the offensive against Fort Duquesne. Reinforcements in the form of 200 Virginia troops, 100 British regulars, and 9 pieces of small artillery, apparently bolstered his confidence enough to attempt moving on the French presence at the Forks of the Ohio. Anderson, 59-60.

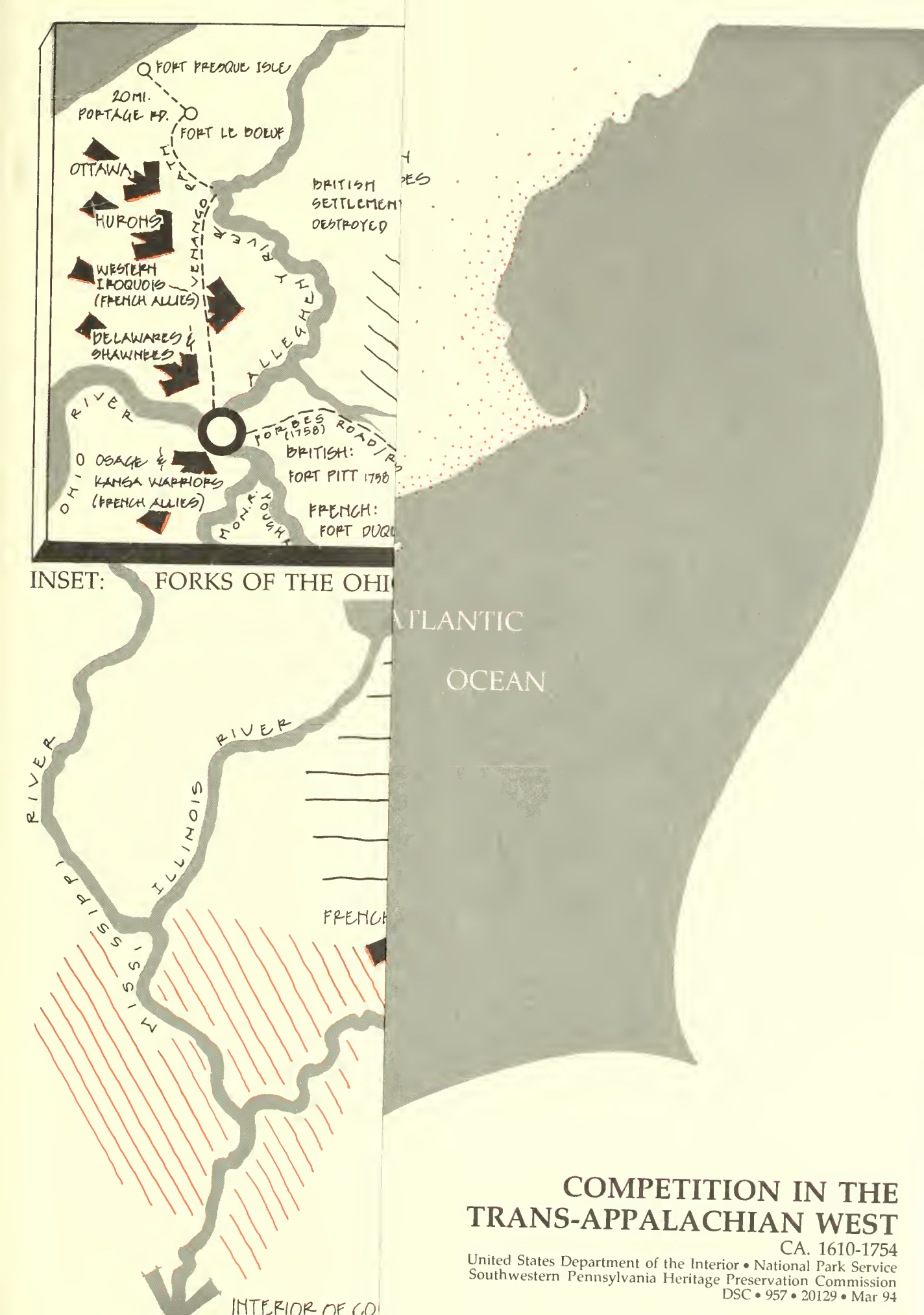
the French strongholds at Forts Duquesne, Niagara, and Fort Frederic on Lake Champlain. The forks of the Ohio were clearly seen as the gateway to the north as well as to the West. If successful, this series of offensives would drive the French back to the St. Lawrence valley.

Braddock's columns expanded and improved the Ohio Company's road sufficiently to allow the passage of a large, heavily equipped army almost to the very threshold of Fort Duquesne. Braddock's army decidedly outnumbered the combined French and Indian forces. But the general held the Native American tribes in complete contempt. He appreciated neither the vital role they would play in the coming conflict, nor the realities of war on the frontier. His inability to adapt to a radically different military and geographic environment contributed to the ultimate crushing defeat inflicted on his force. Braddock, wounded, died during the disorderly retreat, and left almost half of his assault force scalped and looted in the forests along the Monongahela (see the "Competition in the Trans-Appalachian West" map on page 23 and figure 2 at the end of chapter I).

Braddock's unnecessary and disastrous defeat largely was the work of France's Indian allies, many of whom were "far Indians", from the Great Lakes and beyond. The Ohio River's importance as a corridor to the interior is underscored by the fact that Osage and Kansa warriors from the lower Missouri River traveled hundreds of miles eastward to join their French allies. Delawares and Shawnees who were still seething after being driven from their homelands further east saw no practical alternative to alliance with the French. They in turn entered the conflict against the British, and quickly turned the string of white settlements along the Allegheny Front into a shambles.

The Iroquois became increasingly irrelevant as open warfare robbed them of the opportunity to play the two empires off one another. The multiple offensives by half a dozen tribes against the Pennsylvania frontier punctured the illusion of the Five Nations' hegemony over the western tribes, and some western Iroquois joined in the mayhem. White refugees streamed eastward as Pennsylvanians and Native Americans engaged in a war of unspeakable brutality.

By 1756, the conflict that began with Washington's and Braddock's embarrassing defeats soon embroiled France and Great Britain in a world war that spanned three continents and



COMPETITION IN THE TRANS-APPALACHIAN WEST

CA. 1610-1754

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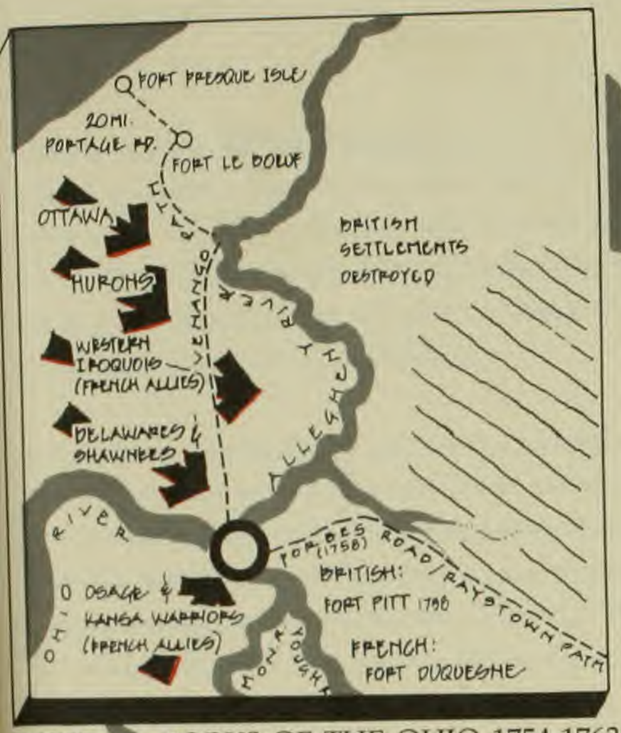

INSET: FORKS OF THE OHIO 1754-1763

CANADA

HURONS

LAKE HURON

LAKE ERIE

LAKE ONTARIO

ST. LAWRENCE RIVER

ALGONQUIN TRIBES

LAKE CHAMPLAIN

LAKE GEORGE

MOHAWK

OHEIDA

MOHAWK R.

HUDSON RIVER

DUTCH TRADERS

FRENCH

ONONDAGA

CAYUGA

SENECA

TUSCARORA (AFTER 1715)

NEW YORK

SEE INSET:

WYOMING

SUSQUEHANNA RIVER

DELAWARE RIVER

JUNIATA R.

BRITISH

MARYLAND TRADERS

1747: THE OHIO COMPANY FROM VIRGINIA

ATLANTIC OCEAN

OHIO RIVER

MISSISSIPPI RIVER

ILLINOIS RIVER

FRENCH

OHIO VALLEY

INTERIOR OF CONTINENT: FUR TRADE

N

MILES 0 50 100 150

FRENCH CLAIMS

ENGLISH CLAIMS

COMPETITION IN THE TRANS-APPALACHIAN WEST

CA. 1610-1754

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engaged most of the leading military powers of Europe. The war became the climactic struggle for control of the North American continent, and the British focused their military efforts there. The forks of the Ohio, with its French fortifications, continued to loom as a priority for the British army. In 1758, another British expedition under Gen. John Forbes set out to retake the headwaters of the Ohio. George Washington and his Virginia troops accompanied Forbes, as they had Braddock.

The choice for the expedition's route led to a prolonged dispute between Washington and Forbes. Washington advocated that the column take the Ohio Company-Braddock Road that passed north through to the Monongahela. Forbes, to the delight of Philadelphia merchants, ultimately settled on an all-Pennsylvania route that followed the Indian Raystown Path through Bedford and then on to the forks of the Ohio. This route was 100 miles shorter than that taken by Braddock, and it would not have to ford the Monongagela. Washington's tenacious advocacy of the Braddock road earned him a rebuke from the General, who suspected that Washington's opposition sprang primarily from his speculative ambitions in the Ohio valley.

As Forbes thought, Washington's push for the Braddock Road was related only tangentially to the logistics of an assault on Fort Duquesne. He, like the merchants of Philadelphia, clearly understood the value of establishing a link between the East and the trans-Appalachian West. In a letter to the governor of Virginia, Washington wrote, "It (the Forbes Road) secures their frontiers at present, and the Trade hereafter."[24] Col. John Armstrong of the Pennsylvania Regiment attached to the Forbes column, wrote, certainly with some satisfaction, to Richard Peters, secretary of the Pennsylvania Provincial Council that, "The Virginians are much chagrined at the opening of the road through this government, and Colonel Washington has been a good deal sanguine and obstinate upon the occasion."[25]

The debate over the army's route underscores the fact that, by the late 1750s, western Pennsylvania had become firmly established as an essential gateway to future development

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24. Niles Anderson, "The General Chooses a Road: The Forbes Campaign of 1758 to Capture Fort Duquesne," *The Western Pennsylvania Historical Magazine*, June 1959, 110.

25. Niles Anderson, "The General Chooses a Road," Third Installment. December 1959, 384.

in the interior. Despite the crisis on their common frontier, both Pennsylvania and Virginia looked beyond the war to the fortunes to be made in the western territories, via the western Pennsylvania corridor.

General Forbes' successful campaign to the forks of the Ohio forced the French to abandon Fort Duquesne. It also significantly improved one of the major transportation corridors through the southern half of the colony. The loss of Fort Duquesne deprived the warring western tribes of the base from which they operated against the settlements of western Pennsylvania. Forbes' overwhelming force pushed some of the combatants into the interior and intimidated others into sullen acceptance of British authority. For all practical purposes, Forbes had pushed the frontier across the Allegheny Front to the Ohio River. With some semblance of peace restored, whites resumed their occupation of the lands along the Allegheny Front.

The French defeat in the war and their subsequent surrender of their North American territories fundamentally changed the balance of power between Europeans and Native Americans in the trans-Appalachian West. Without the ability to play rival European powers off one another, Native Americans found themselves more than ever on the defensive in the face of increasing white settlement on the lands west of the Alleghenies. Growing Indian resentment of British authority and migration into the Ohio country led the western tribes in 1763 to retaliate in a number of attacks against the British presence in the West, some of which were coordinated under the Ottawa chief Pontiac.

One of the focal points of this renewed conflict was the British post at the headwaters of the Ohio River, Fort Pitt. The Delawares and Shawnees laid seige to the fort for over two months. This raised the possibility that the only substantial British presence in the Ohio country would be destroyed. Great Britain responded with an expeditionary force under General Forbes' second in command, Col. Henry Bouquet. Bouquet led a relatively small column of 500 Highlander and American troops along the Forbes Road. After a bloody two-day battle at

Bushy Run on August 5 and 6, 1763, Bouquet's depleted and exhausted force marched to Fort Pitt (see figure 3).[26]

Bouquet's relief force covered 200 miles and fought a major battle in less than three weeks. The existence of the Forbes Road made this relatively rapid march possible. The Bouquet campaign underscores the impact that the creation of a transportation network would have on the future development of western Pennsylvania.

The chaos of Pontiac's war led the British government to take measures to forestall a repetition of the conflict by barring further settlement west of the Allegheny Mountains. This Proclamation of 1763 did more to turn western Pennsylvanians against the Crown than it did to contain expansion across the Ridge. The proclamation alienated Pennsylvania's settlers, and the ensuing 1768 Treaty of Fort Stanwix, negotiated to purchase Indian lands south and west of the Allegheny Front, angered the Delawares and Shawnees who claimed that their lands had been traded away without their consent. The political turmoil that the proclamation aroused combined with continued Indian/Anglo conflict to retard the pace of settlement and the development of transportation in western Pennsylvania.

The smoldering tensions along the Pennsylvania frontier erupted with the outbreak of the American War for Independence. The western tribes allied themselves overwhelmingly with the British in an effort to drive out the American interlopers. Western Pennsylvania erupted in violence reminiscent of the French and Indian War. Americans occupied the forks of the Ohio, however, and control of this strategically vital point prevented the widespread rout that had followed Braddock's defeat. The American presence on the Ohio greatly facilitated the United States' ability to conduct offensives against the tribes allied with the British. Never again would Native Americans be able to drive the white invaders back across the Alleghenies. The strategic value of the three forks of the Ohio proved decisive in the battle over what had become by the end of the war part of the commonwealth of Pennsylvania.

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26. The conventional wisdom on the Battle of Bushy Run has been that Bouquet's forced march prevented the destruction of the fort and saved the Imperial presence on the frontier. On the contrary, it is almost certain that the tribes attacking the fort could have taken it at any time. It is just as certain that, had they wanted, the Delawares and Shawnees could have annihilated Bouquet's badly mauled forces on their way to the forks. What is more probable is that Pontiac's "rebellion" was really a punitive strike intended to force the British to live up to the obligations they had implicitly assumed by succeeding the French in the Ohio valley. The British did, in fact, take a more conciliatory stance toward the Ohio Valley tribes in the wake of the fighting of 1763.

The end of the war allowed Pennsylvania a far greater range of action in occupying and developing the lands in the trans-Appalachian West. The state's transportation network, particularly in the West, was deteriorated or nonexistent. Increased migration towards the Ohio prompted action to create linkages between the East and the developing West. As early as 1785, the General Assembly authorized funding for the construction of a state highway "between . . . the county of Cumberland and Pittsburgh."[27] The already established route of the Forbes Road laid the foundation for one of the state's major east-west transportation corridors. The development of this road facilitated intrastate commerce and also provided an efficient route for the 15,000 federal troops that marched west to Pittsburgh in 1794 to quell the Whiskey Rebellion.[28]

Between the end of the war and the beginning of the 19th century, the United States secured its hold on the territories west of the Appalachians and on both sides of the Ohio River. The tribes of the Ohio Valley resisted this renewed white encroachment and dealt two major setbacks to American military expeditions led by Generals Josiah Harmar and Arthur St. Clair, in what was then called the Northwest Territory (and later became the states of Ohio, Indiana, Illinois, Wisconsin, and Michigan). A third U.S. army under Gen. Anthony Wayne decisively defeated the Ohio Indians at the battle of Fallen Timbers in August 1794 and forced them to cede a huge portion of land between Lake Erie and the Ohio River. This victory demoralized the Six Nations and led them to relinquish their claims on the Erie Triangle, the northwest corner of Pennsylvania that reaches Lake Erie.[29] The acquisition of the Erie Triangle linked the western part of the state with Lake Erie. This important traditional corridor was now firmly in American hands and enhanced western Pennsylvania's established identity as a

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27. George R. Beyer, "Pennsylvania's Roads Before The Automobile," *Historic Pennsylvania Leaflet No.* 33. (Pennsylvania Historical and Museum Commission, 1972), 2.

28. The Whiskey Rebellion has its roots in the 1791 passage of an excise tax on distilled liquors. As western Pennsylvanians relied on distilling to render their grain products into a marketable and transportable commodity, and because they relied on whiskey as a substitute for cash, the tax seemed to weigh disproportionally on those least able to pay. Many rural western Pennsylvanians resisted violently the attempts of federal officials to collect the tax. The threatened uprising alarmed President Washington, who had long harbored a prejudice against backcountry Appalachian settlers as an undisciplined, dangerous rabble disrespectful of private property. He was particularly concerned about the disposition of his speculative land interests in the West. These issues combined with larger issues over the primacy of federal authority led Washington and his cabinet to raise a large army and lead it against the whiskey rebels. In the face of an overwhelming show of federal force, the rebellion collapsed.

29. Carl B. Lechner, "Elimination of Indian Claims to the Erie Triangle," *The Journal of Erie Studies.* (Mercyhurst College and the Erie County Historical Society, Erie, PA) fall 1984, 27-29.

crossroads of American expansion. Americans swarmed into western Pennsylvania. By 1800, southwestern Pennsylvania had 100,000 inhabitants.

In the 1780s, the state government undertook the burden of improving Pennsylvania's overland transportation, but the state was not capable of achieving this on its own. The cost of building a macadam road surface could range anywhere from $4,000 to $14,000 a mile. The stone bridges on the roads could cost as much as $15,000.

The efforts of an early special interest lobby, the Pennsylvania Society for Promoting the Improvement of Roads,[30] persuaded the state government to shift to a shared system of state assistance combined with a corporate charter of private turnpike companies. After 1793, the state regularly made appropriations for the improvements of roads and turnpikes. An act of March 21, 1806, enabled the commonwealth authorized use of state funds to buy stock subscriptions in turnpike companies, which greatly enhanced the ability of these companies to raise funds.[31]

The state also continued to contribute money directly to improvements, investing in a wide range of projects. In 1811, $825,000 were appropriated for roads. The largest single amount was earmarked for western improvements — $350,000 for a turnpike from Harrisburg to Pittsburgh. Legislative appropriations in 1816-1817 contained almost $200,000 for a number of roads in the western part of the state, as well as roads that would link the West with Philadelphia and other cities in the East. These included roads between Greensburg and Pittsburgh, Stoystown and Greensburg, Bedford and Stoystown, Chambersburg and Bedford, Pittsburgh and Bedford, Huntingdon and Cambria, and Beaver to the state line.

The creation of more sophisticated roadways facilitated to some degree the increase of commerce between the eastern and western parts of the state. "Already the annual wagon-freight between the Ohio and this city (Philadelphia), is computed at a million dollars. . . . Ten wagons leave Philadelphia for Pittsburgh every day . . . taking an average freight of 200

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30. Louis Hartz, *Economic Policy and Democratic Thought: Pennsylvania, 1776-1860* (Cambridge: Harvard University Press, 1948), 51.

31. Charles Alexander Williams, "The History and Operations of the Pennsylvania Turnpike System" (Ph.D. diss., University of Pittsburgh, 1954), 36.

dollars, which gives 730,000 dollars outward, and probably one-third inward."[32] France's decision to open its West Indian ports to American traders in part spurred the early need for improvements in transportation, as it increased the demand for western Pennsylvania foodstuffs.[33] With the closure of West Indian trade, American commerce became more focused on domestic markets, but this if anything, accelerated the development of transportation (see Communication and Transportation Routes, 1810-1836 map).

Although the region was overwhelmingly rural, its towns also grew, both as an obvious result of westward migration, and also because western Pennsylvania served as one of the primary gateways to the new states and territories in the Ohio Valley. Pittsburgh's position at the forks of the Ohio determined its rapid rise as an important crossroads of transportation routes. The city's early development of manufacturing enterprises was due in large part to the fact that it so quickly evolved as one of the most important cities in the trans-Appalachian West. Pittsburgh's population grew exponentially between 1790 and 1810, from 376 to 4786. By 1820, its population had grown to 7,248.[34]

Other towns in the region experienced growth in this same period. By 1796, there were nine towns in Fayette County and eight in Washington County. "All the towns had important road connections to the major centers. Five towns were on the early road network that became the famous National Road. . . ."[35] Connellsville grew up at Stewart's Crossing, which had been an important ford on the Youghiogheny since Braddock's campaign against Fort Duquesne. It became a crossing for a state road. Monongahela, originally known as Parkinson's Ferry, was located where the Glade Road from Bedford to Washington crossed the Monongahela River. Two other towns, New Geneve in Fayette County, and Greensboro in Greene County, developed on what Albert Gallatin described as "the nearest portage from the western waters

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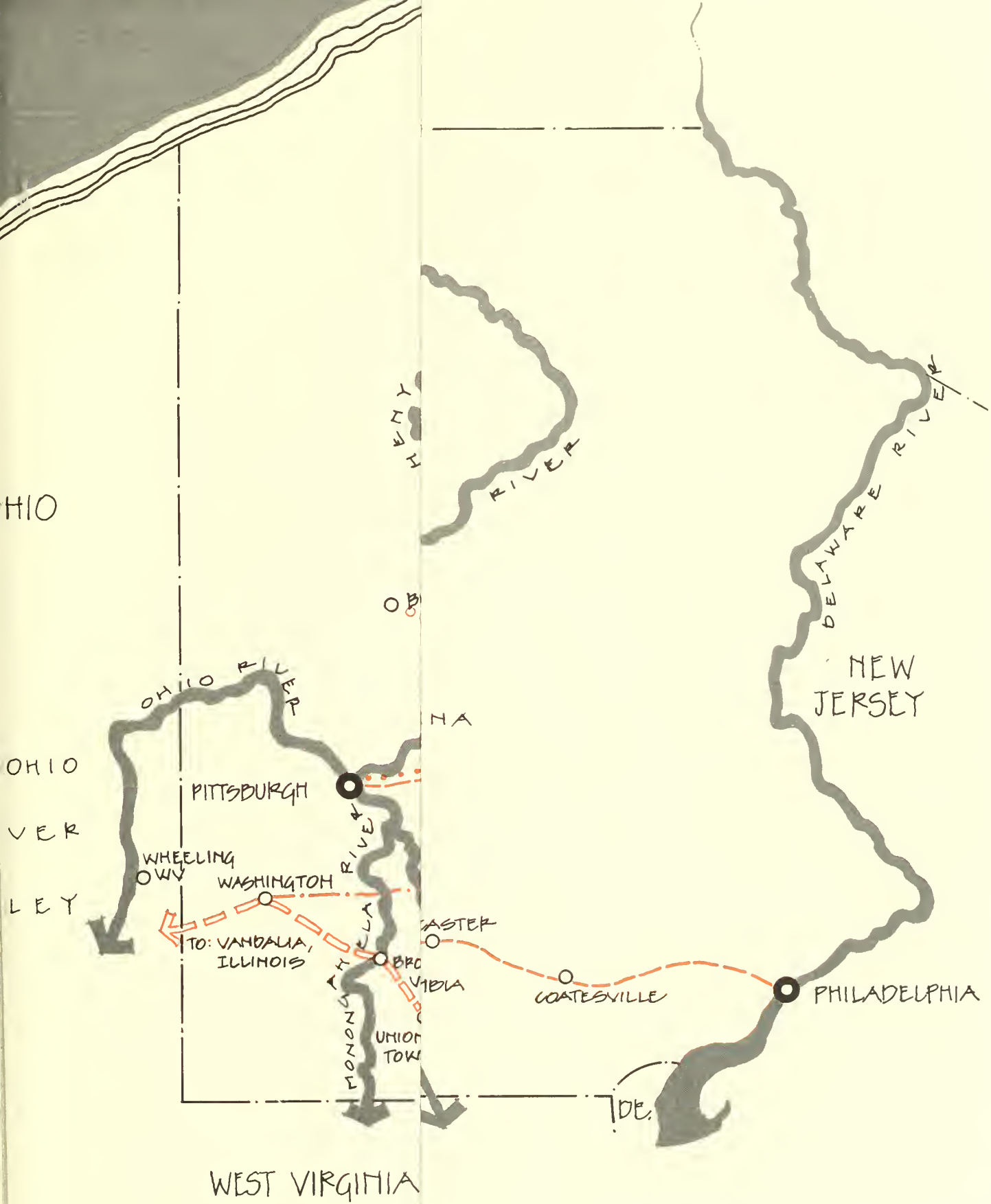
32. Samuel Breck, *Sketch of the Internal Improvements Already Made in Pennsylvania; With Observations Upon Her Physical and Fiscal Means for Their Extension; Particularly as They Have Reference to the Future Growth and Prosperity of Philadelphia. Philadelphia* (M. Thomas, 52 Chestnut Street, 1818), 12.

33. Williams, *"Pennsylvania Turnpike,"* 31.

34. Buck Solon, *The Planting of Civilization in Western Pennsylvania* (Pittsburgh: University of Pittsburgh Press, 1939), 217.

35. R. Eugene Harper, *The Transformation of Western Pennsylvania, 1770-1800* (Pittsburgh: The University of Pittsburgh Press, 1991), 83.



COMMUNICATION AND TRANSPORTATION ROUTES

1810-1836

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NEW YORK

PENNSYLVANIA

ALLEGHENY RIVER

BUTLER

OHIO RIVER

PITTSBURGH

WHEELING WV

WASHINGTON

TO: VANDALIA, ILLINOIS

MONONGAHELA RIVER

BROWNSVILLE

YOUGHIOGHENY R.

CONNELLSVILLE

UNIONTOWN

CUMBERLAND MD

WEST VIRGINIA

WEST BRANCH SUSQUEHANNA RIVER FROM ALLEGHENY

EBENSBURG

HUNTINGTON

ALLEGHENY

BEDFORD

CHAMBERSBURG

GETTYSBURG

SUSQUEHANNA RIVER

SUSQUEHANNA RIVER VALLEY

YORK

LANCASTER

COLUMBIA

COATESVILLE

PHILADELPHIA

DELAWARE RIVER

NEW JERSEY

DE.

MARYLAND

N

MILES

0 5 10 20 30 40

EBENSBURG / BUTLER TURNPIKE

HUNTINGTON / CAMBRIA / INDIANA TURNPIKE

PENNSYLVANIA ROAD

BEDFORD / WASHINGTON TURNPIKE

NATIONAL ROAD

COMMUNICATION AND TRANSPORTATION ROUTES

1810-1836

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to the Potowmack (sic) and the Federal City."[36] Other towns sprang up on important local roads. Canonsburg was on the road from Pittsburgh to Washington and East Liberty on the road from Uniontown to Greensburg.

Brownsville, Washington, Uniontown, Greensburg, and Bedford were growing as important regional communities. All of these towns owed their development primarily to their locations along the region's transportation corridors. Each played a part in the region's transportation network. Bedford's early service as a fort and staging area for military operations in the West carried over into its new role as a stop on the Pennsylvania Road between Philadelphia and Pittsburgh. Greensburg was also on the Pennsylvania Road, and Connellsville served as the head of keelboat navigation on the Youghiogheny River.

Uniontown, Brownsville, and Washington all grew up along the National Road that began in Cumberland, Maryland, on the Potomac River and ultimately ran west to Vandalia, Illinois. The development of this federally funded and constructed road signalled widespread awareness of the dynamic growth and development in the trans-Appalachian West and of the need to create viable transportation and communication lines between this region and the established eastern seaboard.

The federal government had a significant impact on the development of western Pennsylvania. The armies that met both defeat and victory in the Northwest Territory brought much needed capital into the region and also stimulated the production of local industry. Even the army that suppressed the Whiskey Rebellion, although undoubtedly cursed by many westerners, bought needed supplies in the West and helped relieve the cash shortage that in part had prompted the tax revolt in the first place. The construction of the National Road, more than any other federal effort, provided a significant subsidy that helped further the pace of development in the western part of the state.

> The Western Settlers . . . stand as it were on a pivet — the touch of a feather would almost incline them (either to England or to Spain). . . . the way to

36. Ibid., 85.

> avoid both . . . is to open a wide door, and make a smooth way for the Produce of that Country to pass to our Markets.[37]

The development of the National Road plays an especially significant role in the evolution of western Pennsylvania's transportation story. It not only provided the first all-weather, relatively technically sophisticated overland artery between East and West. Its funding and construction represented an unusually intrusive federal role in the national economy. The political inclinations of many Americans leaned toward a federal government with clearly defined and limited powers that did not extend to the improvement of the national infrastructure.[38]

Others, however, like George Washington, feared the fragmentation of the United States along the crest of the Appalachians. To keep the states united in fact, as well as in name, Washington, and later national leaders like Albert Gallatin, Thomas Jefferson, and Henry Clay argued for the construction of some form of communication between the East and West. Western Pennsylvania was an obvious link in the creation of such a route. The rudimentary roads laid by Gist, Nemocolin, and Braddock laid part of the foundation for this singular transportation development.

But the new roadway was a far more sophisticated system than any of the previous routes. The National Road was designed to carry more traffic, heavier loads, and function in all kinds of weather. Construction of the road's macadam surface cost as much as $13,000 per mile in some of Pennsylvania's mountainous regions. The roadway made a far more lasting impression on the landscape, as hundreds of workers cleared trees, graded rights-of-way, and hand-fitted the paving stones.

The road changed the landscape by stimulating the growth of existing towns, the creation of new towns, and the construction of roadside inns, taverns, and other service facilities for the thousands who travelled the road between the established East and the rapidly developing

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37. George Washington, 1784, quoted in Merritt Ierley. *Traveling the National Road. Across the Centuries on America's First Highway* (Woodstock: The Overlook Press, 1990), 20.

38. The following section on the National Road is taken in large part from *The National Road: A Special Resource Study.* (National Park Service, 1994).

states of the trans-Appalachian West. The road corridor quickly fulfilled its promise as a vital artery linking the East with the Northwest. Its many communities became bustling centers where presidents, generals, and politicians crossed paths with immigrants, wagon masters, and cattle drovers. These towns and cities evolved as important elements in a transportation phenomenon of national significance.

Despite the road's imposing scope and complex infrastructure, it still was only one of the multitude of internal improvement projects created in the antebellum United States. Throughout this period, state and local governments, and in a few exceptional cases, the federal government, engaged in innumerable projects to improve the nation's transportation networks. The spectacular investments made in canals, roads, and railroads illustrate the dynamic growth of America in the decades before the Civil War.

Henry Clay, one of the foremost political leaders in antebellum America, pushed aggressively for the creation and maintenance of the National Road. Clay saw this internal improvement as an essential component of his "American System" of national economic development. But Congress, representative of the time's more loosely united American states, could not reach consensus on the legitimacy of federal funding of projects like the National Road. When Congress did agree on a plan to finance the road and other improvements, President James Monroe vetoed the bill as an unconstitutional exercise of federal power.

Although Pittsburgh might appear as the logical destination for such a route, the National Road's first terminus was Wheeling, Virginia, in large part because Henry Clay had fewer friends in Pittsburgh. The road originally was intended to pass through only a small corner of Pennsylvania, but the state's politicians pushed to have the route moved farther north. Both Clay's and Pennsylvania's political interference in the development of the National Road are symptomatic of the tangled relationship between politics and the development of public works. Public works projects often have spawned corruption and graft within the political systems that oversee them, and the history of western Pennsylvania's transportation development for the next half-century graphically illustrates this point. Throughout the period of internal improvements in the first half of the 19th century, the state's politicians adroitly manipulated the state's efforts to improve its transportation network.

Between 1800 and 1820, American emigration to the West accelerated dramatically. In 1800, about 400,000 white Americans lived in the area west of the Appalachians. Within 20 years, that number had jumped to 2 million.[39] Kentucky, on the Ohio River had been a state for almost 30 years. Ohio, Indiana, and Illinois in the Old Northwest Territory had become states, and Missouri would achieve statehood in 1821. The explosive growth in the West created new opportunities for trade over the mountains and placed increasing demand on the states to improve transportation both within their borders and with neighboring states, as well.

Pennsylvania continued its efforts to improve communication and transportation between the eastern and western portions of the state. In addition to efforts to construct the Pennsylvania Road between Philadelphia and Pittsburgh, the state also appropriated funds for a road that would connect the Susquehanna and Ohio River valleys. This road, running between Huntingdon and Pittsburgh, was constructed in sections between 1810 and 1821 by three different companies. The Huntingdon-Cambria-Indiana Turnpike, as it became known, followed parts of the Frankstown Indian Path and created the right of way for the William Penn Highway (U.S. 22). Another series of companies constructed a turnpike between 1821 and 1831 to connect Bedford with the National Road at Washington, and three companies built a road between Ebensburg and Butler, following the route of the Kittaning Indian Path (1822-1828).

By 1832, Pennsylvania led all states with 2,400 miles of turnpikes.[40] Much of this mileage had been constructed by turnpike charter companies supported by individual communities, often with indirect assistance from the state. Despite the absence of a comprehensive plan, Pennsylvania's road system was relatively well integrated, and linked to roads in other states. The state's efforts to improve its transportation system facilitated immigration, encouraged the growth of cities and towns on the roads, as well as great numbers of taverns and inns, and increased intrastate and interstate trade. Before the construction of Erie Canal, "the Pennsylvania Road carried nine-tenth of all the transmontane traffic of the nation. . . ."[41]

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39. James West Davidson, et al., *Nation of Nations. A Narrative History of the American Republic*, vol 1, *To 1877* (New York: McGraw-Hill Publishing Company, 1990), 311.

40. Williams, "Pennsylvania Turnpike System," 36.

41. Ibid., 203.

Pennsylvania's focus on roads led to the construction of relatively sophisticated turnpikes and bridges that undoubtedly improved transportation and communication within the state. But road transport remained prohibitively expensive for the shipment of a number of bulky commodities. The speed of a horse and wagon was extremely limited, as was its carrying capacity. The load limit on the turnpikes was five tons. Most western produce still went downriver to New Orleans for shipment to the East. This was the first arc in a circular trade that continued through the Gulf of Mexico to the Atlantic and the seaports of the east. Eastern goods then were shipped overland to the trans-Appalachian settlements. The cost of shipping goods over the 300 miles between Philadelphia to Pittsburgh exceeded the cost of river and sea transport from Pittsburgh to Philadelphia.[42]

Pennsylvania continued to support the construction of roads throughout the first third of the 19th century, despite the fact that the greatest part of the state's energies after 1825 were devoted to canal construction and maintenance. The state's leadership recognized that the canals would not serve the more remote sections of the state, but that these areas still required some transportation assistance. The money given to road development also resulted from the need to maintain political support in areas that were indifferent or hostile to the state canals, to keep Pennsylvania trade from leaving the state, or simply to pay political debts. *The Pittsburgh Gazette* reported in 1836 that

> the anti-Mason Democrats also resolved that 'our representatives in the last Legislature, by procuring the following appropriations, have proved themselves to be the friends of Allegheny county interests, faithful to their constituents and worthy of the future confidence of the people vis:
>
> | | |
> |---|---|
> | Pittsburgh and Washington Turnpike Road | $15,000 |
> | Pittsburgh and Greensburgh Turnpike Road | 12,000 |
> | Pittsburgh and Mount Pleasant Turnpike Road | 5,000 |

However, 1836 marked the end of the state's investment in turnpike and roads construction, although it still held substantial amounts of turnpike stock. By this point, it was obvious that canals were superior to horse-and-wagon transport, just as rail would soon prove superior to both. Three-quarters of a century would pass before the state again invested in road construction.

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42. George Rogers Taylor, *The Transportation Revolution, 1815-1860*, vol. 4 of *The Economic History of the United States*. (New York: Holt, Rinehart and Winston, 1962), 159.

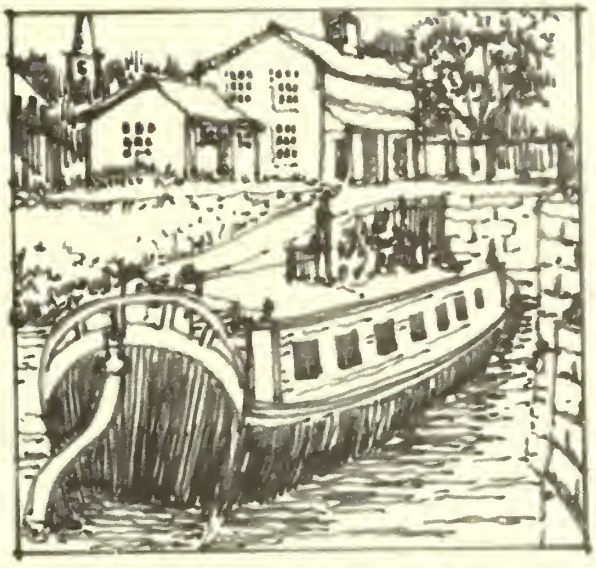
The road development that followed focused on the creation of plank roads, whose relative cheapness and ease of construction made them popular as feeders to the state's canals and railroads. Two hundred thirty-two plank road companies were incorporated between 1849 and 1854, but these roads deteriorated quickly, often within five years or less. Without continued state aid, they soon disappeared in the face of increased competition from large-scale railroads.

Pennsylvania attempted to divest itself of turnpike stock, with spectacularly poor results. In an auction held in 1878, the state received $6,041.68 on stock for which it had paid $550,360. In a second auction, in 1880, the state $2,224.12 for stock originally bought at $727,575. Pennsylvania took a breathtaking beating on its $173,860 investment in the Huntingdon Cambria and Indiana Turnpike Company, which returned $11.26. Its $191,150 worth of stock in the Stoystown and Greenburg yielded $229.38. The most insulting, although not the worst return, was the $0.36 the state received for $3,650 worth of stock in the New Alexandria and Conemaugh stock. Clearly, road development in western Pennsylvania was not a part of the discerning investors' portfolio.

By the middle of the second decade of the 19th century, Pennsylvania's emphasis on improvements shifted dramatically from roads to canals and rail, largely in response to the development of New York's Erie Canal. The Erie's success threatened to attract western Pennsylvania's commerce and usurp the state's role as the primary link to the West. The construction of the Erie Canal triggered a frenetic period of internal improvements construction in Pennsylvania that ranged from the magnificent to the bizarre. The following quarter century witnessed intense competition, corrupt politicking, wild public spending, and industrial capitalism that ultimately reinforced western Pennsylvania's traditional role as one of the nation's essential transportation corridors.

FIGURE 2: BRADDOCK'S DEFEAT. Painting by Edward Deming, 1903. Deming's painting shows Ottawa, Huron, Chippewa, and Potawatomi warriors, the "far Indians" of the West, attacking the British. Maj. George Washington reaches to catch Braddock's bridle. *Courtesy of the State Historical Society of Wisconsin.*

FIGURE 3: AN EARLY ENGRAVING FROM THE PERSPECTIVE OF MT. WASHINGTON. The scope of the British fortifications at the forks of the Ohio graphically illustrates the strategic importance of the site. *Courtesy of the Historical Society of Western Pennsylvania.*



II. Internal Improvements: River Navigation and Canal Building

The State Works of Pennsylvania —

> Pennsylvania was driven into her works of internal improvement, by what New York and Maryland had done. The great thoroughfares to the west, which these states had opened, or were opening, threatened to open the trade of the Valley entirely from Philadelphia, while Pittsburgh was also in danger of losing the profits of a western depot. Hence for the interests of these two cities, and through them of the state, there must be, whether dame Nature smiled or frowned, a grand highway for travel and commerce through Pennsylvania. There *must* be, and I doubt whether history presents any thing like a parallel to the work which the state has achieved in the accomplishment of her purpose. Hannibal's passage over the Alps, and Napoleon's over the Simplon, I cannot but esteem trifles, in comparison with this victory obtained by the peaceful state of Pennsylvania over the Alleghenies.[43]

Pennsylvania's extensive road building programs in the period 1780-1840 comprised only one part of the state's growing pursuit of internal improvements in the decades following the

43. *The Hollidaysburg Canal and Portage Register,* September 7, 1836, 2.

nation's independence.[44] The state also became involved in improvements in river navigation and, by the early decades of the 19th century, with canal development, as well. The state government's participation in transportation development grew steadily through the first half of the 19th century. By the middle of the 1830s, the majority of the state's budget was devoted, directly or indirectly, to public or private works projects related to transportation. These efforts profoundly affected the evolution of Pennsylvania's politics, economy, and society.

Western Pennsylvania has a number of important river systems that flow north, south, east, and west through the region. The Allegheny, Monongahela, Youghiogheny, and Conemaugh rivers created arteries for travellers moving north and south. The Susquehanna, Juniata, Kiskaminetas, and Ohio rivers facilitated travel for east- and west-bound travelers. The region's river systems provided corridors for travel between the coastal areas, the Hudson River drainage, the Great Lakes, and the Ohio River valley. The west branch of the Susquehanna penetrated the Allegheny Ridge, which meant that Native Americans and European traders, with two portages, could travel by water from the Mohawk River to the Mississippi River. The Susquehanna's west branch and the two branches of the Juniata River were the natural highways for the European settlers who pushed into western Pennsylvania in the middle of the 18th century.

However, all of these rivers could prove mercurial to travelers who attempted to navigate them with any but the simplest, shallow-draft craft. The spring thaws could raise rivers sufficiently to make them navigable, but severe flooding often made travel too dangerous. By late summer, streamflow usually dropped too low to allow passage of boats of any significant size. Europeans who wished to develop more sophisticated transportation systems quickly focused on these streams' limitations. As early as 1769, "a plea was made to the (Pennsylvania

44. Historians once described the time period 1800-1850 as the "Age of Internal Improvements." This term originated in Whig historiography and was carried through the consensus historiography of the 1950s and 1960s. Historians subsequently have rejected this usage as a simplistic and positive description of a complex process that clearly had negative implications for significant numbers of Americans. However, we must not disregard the fact that the term was commonly used at the time to describe the development of the American transportation infrastructure. For many people, canals, turnpikes, and development of river navigation were definitely an improvement over what had existed before.

colonial) assembly that the Juniata be made navigable."[45] Between 1791 and 1807, the channels of the Juniata and its Raystown and Frankstown branches had been improved. Channel clearing commenced on the Allegheny almost immediately upon the state's acquisition of the Erie Triangle in 1794. By 1807, improvements had also been made on the Monongahela, the Youghiogheny, and the Kiskaminetas.[46]

Pennsylvanians began shipping on these streams before 1800. "In the spring of 1795, a man named Kryder . . . brought the first boat down the Juniata from Huntingdon to Harrisburg. . . . Philadelphians were embittered that he went on to Baltimore. . ."[47] This small incident illustrates a geographic fact of life for southern Pennsylvania's commercial activities. The Susquehanna's flow to Chesapeake Bay naturally diverted much of that region's trade to Baltimore, not Philadelphia. Southern and western Pennsylvania's economic relationship with Baltimore continued to evolve and grew stronger throughout the first half of the 19th century.

Western Pennsylvanians also began shipping on the rivers that flowed on the western side of the Appalachian watershed, to the Mississippi River and New Orleans. As early as the 1790s, the region's agricultural produce, whiskey, iron, and the products of Pittsburgh's fledgling manufacturing enterprises were floated downriver to the Spanish port of New Orleans. The West's growing commercial ties with a foreign power prompted American political leaders to push for the construction of transportation systems that linked the West with the Atlantic rather than the Mississippi.

Before 1811, flatboats and the somewhat more sophisticated keelboats provided the only substantial transport for westbound freight and immigrants. The flatboats were little more than covered rafts that could only travel with the river's current. Upon arrival at their destination, the flatboats were broken up for lumber and their crews returned home on foot. Keelboats could be rowed or poled upstream, but this was a labor-intensive enterprise that

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45. Robert McCollough and Walter Leuba, *The Pennsylvania Main Line Canal*, (York, PA: The American Canal and Transportation Center, 1973), 4.

46. The Hagley Museum and Library Accession 1777, Map Project Data Files. These efforts to improve navigation on Western rivers were undertaken both by the state and by private corporations.

47. McCollough and Leuba, *The Pennsylvania Main Line Canal*, 5.

did not offer a viable solution to the problem of creating two-way transport on the region's rivers.

The need for more efficient transportation became more pressing after 1800 because of the remarkable increase in Pittsburgh's productive capacity. Zadok Cramer's 1814 edition of *The Navigator*, a guide for travelers and settlers on the Ohio and Mississippi River drainages, described the wide array of industrial endeavors in the city. Pittsburgh was home to

> One grist mill (steam) . . . Three carding and spinning mills . . . Two distilleries . . . Three breweries . . . Four brick yards . . . One rope walk . . . Two air furnaces . . . Three red lead facturies (sic) . . . Six naileries . . . Three glass works . . . Two potteries . . . Two gun smitheries . . . Sixteen looms . . . Six tanneries . . . Four cooperies . . . Two wagon makers . . . Three boat and ship builders. . . . One wire weaving, at which sieves, screens, riddles, etc. are made to considerable extent — three printing establishments and one book bindery.[48]

Cramer also reported that the city's iron industry " . . . is becoming a manufacture of the greatest importance."[49] Cramer, with some amount of booster hyperbole, wrote that "It (Pittsburgh) is a place of note and celebrity not only in America, but even in Europe." Even at this early age, however, the city displayed elements of its later notorious character. "The traveller, however, on entering it for the first time, meets with some disappointment. The town (is) enveloped in thick clouds of smoke, which even affect respiration; the appearance of the houses is dark and gloomy, from the general use of coal, particularly in the numerous manufacturies (sic), which send into the air immense columns of smoke. . . ."[50]

The shipwrights in Pittsburgh provided an unusual and innovative alternative to the limitations of shipping via flatboats and keelboats. From 1795 to 1810, and again from 1840 to 1865, the city's shipbuilders constructed a significant number of oceangoing sail and steamships. The city possessed a number of the essential elements of the shipbuilding

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48. Zadok Cramer, *The Navigator* (Pittsburgh, PA: Robert Ferguson & Co. Printers, 1814), 55-56.

49. Ibid., 58.

50. Ibid., 49.

industry. In addition to a skilled labor force, "Black walnut was common along the banks of the Monongahela. . . . Along the Allegheny there were great stands of white pine and hemlock (for masts) . . . rope walks capable of supplying cordage for ships' rigging . . . iron was available from Pittsburgh forges. . . . Locally grown flax provided the raw material for linen sailcloth."[51] Pittsburgh ships carried regional produce and manufactured goods down river to the port of New Orleans, and on to New York and Philadelphia. Some of these vessels served in trade in the West Indies, the Atlantic, and the Mediterranean.

The construction of oceangoing ships did not solve Pittsburgh's problems regarding the receipt of trade from the East, since none of the vessels constructed in the period 1795-1810 ever returned to the headwaters of the Ohio. Deep-draught ships were a high risk in the West's shallow rivers, and this, combined with the lack of available credit for Pittsburgh shipyards and the general decline in American mercantile shipping in the wake of the Embargo Act of 1807[52] put an end to the first phase of Pittsburgh shipbuilding. Western Pennsylvania still confronted the need for an efficient means of trade and travel between the coast and the lands west of the Alleghenies, not only to import needed goods, but to provide access to market for its own growing manufacturing base.

> As the first quarter of the nineteenth century drew to a close, trade rivalry assumed a new intensity among the three important Atlantic seaports — Philadelphia, New York, and Baltimore. The rich prize on which all of them cast covetous eyes was the rapidly growing traffic to and from the Mississippi valley . . . a dominant position in the trade with the new West thus became the goal of each of the port cities.[53]

The above statement, in one variation or another, has prevailed as the conventional wisdom concerning Pennsylvania's massive public works improvements of the 1820s and 1830s.

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51. William F. Trimble, "From Sail to Steam: Shipbuilding in the Pittsburgh Area, 1790-1865," *The Western Pennsylvania Historical Magazine*, April 1975, 148.

52. President Thomas Jefferson imposed the embargo on foreign trade in retaliation for British and French attacks on American shipping during the Napoleonic Wars. Jefferson hoped that the embargo's economic pressure would force more moderate behavior from the warring powers. Instead, it depressed the American economy and encouraged smuggling by American merchants. The failed embargo was replaced by Congress in 1809 with the equally ineffective Non-Intercourse Act of 1809.

53. *Allegheny Portage Railroad: Its Place in the Main Line of Public Works of Pennsylvania. Forerunner of the Pennsylvania Railroad* 2:9-11 (February 1930).

Undoubtedly, the completion of the Erie Canal in 1825 motivated Pennsylvanians, particularly in Philadelphia and Pittsburgh, to agitate for the creation of a competing system for their state. The statement above describes a broader, (and arguably more correct) context for Pennsylvania's system of public works as part of an interstate network, not simply an east-west intrastate linkage. However, this perspective assumes a more or less equal rivalry among the cities, and particularly between Philadelphia and New York, that was only unbalanced by the Erie Canal. More recent scholarship, however, indicates that economic conditions on the Atlantic seaboard were somewhat more complicated.

Diane Lindstrom's work on the Economic Development of Philadelphia in the first decades of the 19th century[54] indicates that the commercial rivalry between the two cities had already been resolved long before the construction of the Erie Canal. Her quantitative study paints a portrait of a complex, evolving urban economy that was growing beyond the city's roots as a commercial center. After 1810, Philadelphia's economic growth resulted from the expansion of its manufacturing base that had its roots in a long tradition of handicrafts. While Philadelphia grew between 1810 and 1840, it still fell behind New York. During this same period, Philadelphia's foreign commerce suffered an absolute decline.

A number of factors contributed to this transformation. The explosive growth in New York's hinterland after 1780[55] led to increased agricultural production and created new incentives for trade between New York and the state's interior. New York and Baltimore's harbors were superior to Philadelphia's port facilities, as Delaware Bay was prone to closure by ice in the winter. Philadelphia's focus on the West Indian trade hurt its competitiveness with its rivals when that trade closed in the early 1800s. Later, the completion of the Delaware and Raritan Canal (1834) reduced shipping costs between Philadelphia and New York, and Philadelphians increasingly used New York as a port. Lindstrom concludes that New York's commercial hegemony was well established before the War of 1812.

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54. Diane Lindstrom, *Economic Development in the Philadelphia Region, 1810-1850,* (New York: Columbia University Press, 1978).

55. Between 1730 and 1780, New York grew 333%, while Pennsylvania grew 533%. In the period 1780–1810, New York's growth increased to 356%, while Pennsylvania's fell to 148%.

Lindstrom argues that the trans-Allegheny trade was not significant until the 1830s. Even the completion of the Pennsylvania Main Line of Public Works in 1834 did not bring a windfall trade to Philadelphia. "Not until 1840 — when special rates were established — would most Western exports to Philadelphia follow the Main Line instead of the circuitous route via New Orleans."[56]

We see from this perspective a much more complex chain of circumstances surrounding the development of public works and transportation improvements. However, the fact remains that powerful elements in the Philadelphia business community, bankers as well as merchants, agitated and lobbied for the creation of a transportation system to rival the Erie. Hindsight almost certainly makes Philadelphia's commercial decline more self-evident than it was in the first decades of the 19th century. Also, support for a more sophisticated transportation infrastructure was not limited to the eastern part of Pennsylvania. The growing western portions of the state, particularly around Pittsburgh, also were adding their voices to the internal improvements movement. Obviously, significant incentives still existed for the state to invest in an East-West trade route. But the more traditional, simplistic answer that Pennsylvania's public works were a manifestation of American westward expansion does not fully take into account the state's diverse economic, social, and political environments.

The very fact that Philadelphia's manufacturing base was growing offers some explanation for the increasing demand for either a canal or rail link between Philadelphia and Pittsburgh. The city's manufacturers quite naturally would be interested in additional markets for their products. And as we have seen, Pittsburgh even in its early decades had a vibrant manufacturing economy and would require a transportation system for shipping and receiving finished products and raw materials. In addition to these concerns, the state's leaders clearly recognized the Erie's potential ability to syphon western Pennsylvania trade to New York. This, coupled with the fact that significant parts of Pennsylvania, including the southwestern counties[57] and the Susquehanna valley, were commercially linked to Baltimore

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56. Lindstrom, *Economic Development in the Philadelphia Region*, 113.

57. Peter A. Wallner, *Politics and Public Works: A Study of the Pennsylvania Canal Systems, 1825-1857*. (PhD. diss., Pennsylvania State University, 1973), 37. Also, Robert E. Carlson, "The Pennsylvania Improvement Society and its Promotion of Canals and Railroads, 1824-1826." *Pennsylvania History* 31:296 (1964).

far more than to Philadelphia, posed a perceived, if not real, danger that Pennsylvania would become subordinate to her neighbors on the north and south.[58]

The widespread fear that Pennsylvania might soon slide into decline created a sympathetic audience for the advocates of transportation improvement. These boosters were able to build upon the fact that the state of Pennsylvania had already demonstrated a willingness to contribute to the improvement of the transportation infrastructure with state-funded turnpikes throughout the state and canals east of the Susquehanna River. The pro-development spokesmen, including many of the leaders of Philadelphia's merchants, bankers, and publishers, organized an effective lobby for the creation of a state-funded and owned system of public transportation. This lobby took form in the creation of the Pennsylvania Society for the Promotion of Internal Improvements in the commonwealth. One of its founding members was Mathew Carey, publisher and one of the most effective political propagandists in the United States. The society's efforts to build support for a public works program benefitted enormously from Carey's influence and powers of persuasion.

Carey had begun his career in Ireland as the editor of a radical newspaper that advocated revolution against British authority. After fleeing to America to avoid arrest, he became a propagandist for the Federalist party and later for the rival Republicans. As a publisher and pamphleteer,

> between 1819 and 1833, Mathew Carey became the most prolific writer of economic literature in the United States. He flooded the nation with hundreds of thousands of his numerous nationalistic pamphlets. Together with . . . Nezekiah Niles of Baltimore . . . Carey created the statistical and theoretical foundations for (Henry) Clay's American System.[59]

Carey had long been involved in the Philadelphia banking community. He was an investor in the Chesapeake and Delaware Canal and had been a leading figure in the unsuccessful effort in 1810-1811 to renew the charter of the First Bank of the United States. As one of the

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58. It is certainly possible that the Society for Internal Improvements advocates recognized the very process of commercial decline in Philadelphia that Diane Lindstrom describes in her work. If this is the case, however, it is less likely that they appreciated its magnitude or would have perceived it as a fait accompli.

59. Edward C. II. Carter, "The Birth of a Political Economist: Mathew Carey and the Recharter Fight of 1810-1811," *Pennsylvania History* 33:275.

architects of Clay's American System, Carey naturally would be attracted to a transportation system on the scale of the Pennsylvania public works.[60]

Other figures involved in the Society included Joseph P. Norris, president of the Bank of Pennsylvania, and Nicholas Biddle, the powerful president of the Second Bank of the United States. The Philadelphia banking community was acutely interested in the development of public works. This avid support from the city's bankers reflected less on their concern for the future for the city's commercial interests than it did on the fact that state investment in public works would create an almost unlimited demand for loans from the banks. "By making loans to the state to finance (canal) construction the banks expected to benefit from interest payments. Most importantly . . . the state would become dependent on the survival of the banks and would look more favorably on the banks when it came time for new charters." [61]

The Society for Internal Improvements funded a trip by William Strickland, a Philadelphia engineer, to inspect transportation improvements in Europe. Strickland's work was supposed to be an objective comparison of canal and rail systems, with the society officially neutral on the specific mode of transport. Unofficially, however, the society was committed to canals and effectively buried Strickland's recommendation for rail development while simultaneously using the intelligence he had gathered to solidify support for a cross-state canal. The society successfully played upon the state's anxieties over the transportation developments in New York and Baltimore, the eastern terminus for traffic on the National Road. The state legislature passed the bill authorizing the creation of the Pennsylvania Public Works in February of 1826.

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60. Henry Clay's American System included the reestablishment of a national bank, a tariff to protect American industry, and a comprehensive program of federally funded internal improvements. Clay, a westerner, John Quincy Adams, from New England, and John Calhoun, a southerner, cooperated on the formulation of this plan and intended that the system would be implemented on a national basis to overcome intersectional rivalries. The bank and tariff were realized, but with the exception of the National Road, the federal government did not contribute to improvements of the transportation infrastructure.

61. Wallner, *Politics and Public Works*, 24.

> Elections were won and lost, political careers made and destroyed, and state parties grew and disintegrated because of their role in the state-owned canal system . . . the significance of the canal and railroad system was not its effect on the economy . . . but its effect on state politics.[62]

The Main Line of Public Works' impact was not limited to the political arena.[63] It did have an effect on the state's economy, if for no other reason than the enormous debt it accumulated during its short life span. It also shaped the state's social development. But its construction, operation, and maintenance also profoundly altered the evolution of state politics. Its functional shortcomings also negatively shaped the public's perception of the effectiveness of governmental involvement in the economy.

The success of the Society for Internal Improvements in promoting development of a canal could mislead one to believe that a broad consensus existed for the creation of public transportation system. In fact, support for canal resided largely in Philadelphia and Pittsburgh, the cities that would form the two termini of the public works, and in the narrow corridor between them. Pennsylvanians both to the north and south found public expenditures for a project that would benefit them marginally a little harder to digest.

The northwest corner of the state was already linked to outside markets by Lake Erie and the Erie Canal. Many of the counties in the southern and southwest portions of the state, including Bedford, Cumberland, Franklin, Lancaster, Lebanon, and York already had strong commercial ties to Baltimore. Many of the residents of these counties "opposed a canal that would benefit Philadelphia."[64] The resistance of these parts of the state created formidable political pressure that forced the advocates of state-funded transportation to make significant adjustments to their grand vision of the state's public works.

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62. Wallner, *Politics and Public Works*, vii.

63. The Pennsylvania Main Line of Public Works consisted of the Philadelphia and Columbia Railroad, an 82-mile rail line, the Eastern Division, a 43-mile canal, the Juniata Division, a 127-mile canal, the Allegheny Portage Railroad, covering the 36-mile route between Hollidaysburg and Johnstown, and the Western Division, a 103-mile canal. National Park Service, U.S. Department of the Interior, *The Pennsylvania Main Line Canal. Juniata and Western Divisions. Special Study*, by David A. Fritz and A. Berle Clemensen, (Denver Service Center 1993).

64. Wallner, *Politics and Public Works*, 37. Wallner's statement on the political impact of the canal downplays the canal's effect on the state's economy, which was considerable. But the emphasis on politics in his dissertation adds some dimension to our understanding of the story of Pennsylvania's public works, a subject that has not received a great deal of scholarly attention.

Part of the pro-development force's political problem resided within the very structure of Pennsylvania's political system. By the mid-1820s, the Federalist party that had been most amenable to internal improvement projects had effectively ceased to exist. Pennsylvania politics, like the politics of the nation at large, operated on a one-party basis. But the supporters of the state public works represented only one faction within the state's Democratic party.

However, members of this faction controlled key posts in the legislature, and adroit use of this strength probably swung the necessary support for the improvements bill. The most prominent of these figures was William Lehman, who chaired the committee on inland navigation from 1821 to 1829. Lehman was a member of the Improvements Society, a Federalist by political temperament, and he represented Philadelphia's leading merchants and bankers who stood to gain from public funding of transportation. The pro-improvement faction prospered, as the balkanized nature of the Democratic Party impeded the organization of any effort to counter the push for improvements.

Even so, Lehman and the other pro-improvement politicians had to contend with extensive, but unorganized opposition to the state works. Since counties in the northwest and southwest opposed the system, the society and later its representatives in the legislature had to promise to create feeder canals to virtually every region in the state. This dilution of time, energy, and resources probably doomed whatever slim chance the Main Line system had of becoming a viable rival to the Erie.

The eventual victory of the pro-canal forces effectively marked the beginning of the end of one-party politics in Pennsylvania. The unification of political power in the east and west raised the very real possibility that interests in the north and south would be isolated. "Defeat of their interests by the canal advocates resulted in the realization that preparations would have to be made to guard these interests in the future."[65] The initial fight over public works played a leading role in the creation of a two-party political system within Pennsylvania. This in turn helped ensure that the debate over state funding of transportation would be the single most important subject in the Pennsylvania legislature for the next 25 years. The canal gave

65. Wallner, *Politics and Public Works*, 53.

the opposition an issue around which it could rally, but it offered little in the way of a broader political ideology. The creation of a new political movement in the late 1820s gave the anti-improvement forces an identity around which they could coalesce. The Pennsylvania Main Line of Public Works played an important in the evolution of the first third-party movement in American history.

In 1826, William Morgan, a disgruntled Mason who had threatened to write a book exposing the secrets of the Masonic order, disappeared in upstate New York. When powerful Masons thwarted a subsequent investigation of Morgan's disappearance, an anti-Masonic movement sprang into existence and quickly spread to other states. Anti-Masons were bound together by a conspiracy theory claiming that, among other things, Masons engaged in clandestine efforts to control the American political process. The movement attracted support from farmers, craftsmen, and those who embraced the evangelical and temperance movements then in vogue. Undoubtedly, anti-Masonry expressed the anxieties of those who feared the loss of status and affluence in a rapidly evolving market and manufacturing economy.

In Pennsylvania, anti-Masonry attracted support among these groups and also from the state's German population, particularly those of the Plain Sects who opposed the taking of oaths. This group traditionally distrusted large government and resisted taxation. A large number of these Germans lived in the southern part of the state and believed that the creation of a canal would not benefit them. They, like others who did not reside on the east-west axis that the canal would follow, believed that they did not have adequate representation in state politics. They had opposed the improvements movement in the state without the benefit of a political structure. Anti-Masonry provided a larger political framework for the opponents of the public works and it spread with remarkable speed. Within a few months in 1829, the number of anti-Masonic newspapers in Pennsylvania grew from 18 to 42. Freemasonry was, on the surface, the only issue in the gubernatorial campaign of 1829.

Part of this struggle over internal improvements centered upon the political patronage that the public works would create. The spoils system that became endemic to Jacksonian-era politics ensured that the bureaucratic and operational positions along the Pennsylvania canal would provide prized political rewards for loyal hangers-on in whatever administration

happened to control state politics. In May of 1842, J. B. Guthrie, wrote to John Snodgrass, the superintendent of motive power for the Allegheny Portage Railroad to recommend

> Mr. Miller (for) a situation on the Portage Rail Road as Engineer. . . . As to Mr Miller's qualifications, you will be furnished a letter from the Engine Builders with whom he served his time. . . . His character is that of an intelligent, sober, industrious man, and an undeviating Democrat.
>
> If you can possibly give him a situation, you will oblige many of your Democratic friends in this city. . . ."[66]

Many canal proponents of a Federalist background viewed the rising support for Andrew Jackson in Pennsylvania as a threat both to the project and their control of key positions on the canal.

Patronage centered around the Board of Canal Commissioners, which the state had created immediately before the creation of the Erie Canal, "to ascertain the practicability of extending the line of communication until it reaches the river Ohio."[67] The commission wielded enormous power over the construction and administration of the canal. In the early years of the public works, the commission could act arbitrarily, and almost with impunity. "James S. Stevenson, one of the commissioners who had replaced (Abner) Lacock as acting commissioner for the Western Division, requested that a canal basin be built on his land adjacent to the canal. The commissioners complied with his request."[68]

The downside, of course, was that the canal commission also made the most visible target for critics of the public works. In 1830, the Jacksonian-controlled legislature, under pressure, reorganized the board. It reduced the number of commissioners to three and gave the power of appointment to the governor. Wallner writes that "These reforms were the culmination of a promise made to the voters by the Jacksonians in the election campaign of 1828."[69] These

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66. J. B. Guthrie to John Snodgrass, May 31, 1842, Box 1-1-50 to 12-30-50, file Portage Railroad 3-4-50, Hoenstine Rental Library, Hollidaysburg, PA.

67. Wallner, *Politics and Public Works*, 13.

68. Robert D. Ilisevich and Carl K. Burkett Jr., "The Canal Through Pittsburgh: Its Development and Physical Character," *The Western Pennsylvania Historical Magazine*, October 1985, 363.

69. Wallner, Peter A. *Politics and Public Works*, 86.

reforms were largely window dressing, however, as abuses continued, regardless of which political party controlled patronage.

As anti-Masonry spread, it offered the only viable political mechanism with which to oppose Jacksonian Democrats. Its very success tended to dilute its political message, as it attracted anti-Jackson Democrats who supported state-financed public works. This was particularly true in the western part of the state. The anti-Mason stance on public works narrowed to uncontrolled deficit spending and opposition to the construction of branch canals. President Jackson's recharter of the Second Bank of the United States in 1832 brought additional support to the opposition party, as it drove the National Republicans (later the Whigs) into the anti-Mason, anti-Jackson fold. Jackson's legendary war against the Second Bank (and its president, Nicholas Biddle) had profound consequences for Pennsylvania's Main Line system. In April 1834, Jackson withdrew federal deposits from the bank. His action severely limited Pennsylvania's access to credit and development capital for the Main Line. Forced to turn to outside sources for credit, Pennsylvania began to sell canal stock in London.

Nicholas Biddle planned to soften the blow against the bank by winning a Pennsylvania state charter for the Bank of the United States when its federal charter expired in 1836. Thaddeus Stevens, anti-Mason legislator and publisher, packaged an omnibus bill that would award a charter for the bank, and in turn provide loans for the bank for the state public works. The bill's supporters promised local branch canals linked to the Main Line to attract votes. The omnibus bill also threw a bone to anti-Mason Germans by proposing a reduction of property taxes. Biddle claimed to have spent $130,000 to secure the bill's passage. He paid three lobbyists $25,000 each to push legislators to vote for the bill. One of these lobbyists was Joseph McIlvaine, a Philadelphia lawyer and the former secretary to the Board of Canal Commissioners.[70] Corruption almost certainly played a part in the process. The Democrats who were the swing votes in the legislature had been adamantly opposed to its passage.

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70. The logrolling that was a part of the 1836 omnibus bill had become an integral part of the Pennsylvania legislative process by the middle of the 1830s. Lobbying the legislature had also become a common, if not universally accepted, practice. The absence of solid party structure or leadership left legislators vulnerable to the "borers", the professional lobbyists who were ubiquitous in Harrisburg by this time. Eventually, kickbacks and corruption became an inevitable part of state politics. Douglas E. Bowers, "From Logrolling to Corruption: The Development of Lobbying in Pennsylvania, 1815-1861," *Journal of the Early Republic*, winter 1985.

The change in political climate in 1836 also certainly played a significant role in securing the package. By this time, the anti-Masons, in coalition with Whigs and disaffected Jacksonian Democrats, had put one of their own in the Governor's office. Joseph Ritner, a Pennsylvania German, had run for governor before on an anti-Mason ticket in 1829. He was portrayed as "a virtuous German farmer who was a friend to agriculture, who encouraged domestic manufactures and who advocated retrenchment in the expenditure of public money."[71] Defeated in 1829, and again in 1832, Ritner was finally elected by an anti-Mason, anti-Jackson coalition that had become strong enough to elect a governor and dominate the legislature in 1835. This meant, of course, that the anti-Masons now assumed responsibility for their erstwhile bete noir, the Main Line of Public Works.

The party's evolution over the previous 10 years made this a more amenable adoption than anyone might have predicted during the early battles over internal improvements. The creation of an operative political coalition necessarily meant that ideology would be subordinated to political expediency. Many of those who joined the anti-Mason banner were lukewarm in their resentment of the supposed Masonic conspiracy. In the West, even those anti-Masons who were true believers could still wholeheartedly support the continued construction of the public works, for the obvious benefits they could bring to the region. As the anti-Masons became the establishment, the Pennsylvania Main Line of Public Works became their own.

Governor Ritner and his anti-Mason supporters attempted to square this circle by codifying their earlier equivocal stance on public works. They now endorsed public funding of internal improvements, as long as these expenditures were responsible. Ritner reiterated the earlier anti-Mason opposition to diverting funds to branches of the public works while endorsing state aid to internal improvements. As he said in his address to the legislature on December 14, 1836,

71. Wallner, *Politics and Public Works*, 103.

> It will be perceived that the chief item of expenditure during the last year was for the interest of the public debt, and the continuation of the public works. . . . Making an aggregate of seven hundred and twenty and one quarter miles. . . . Yet such has been the ruinous and detached system pursued in their construction, that only four hundred and fifty-five miles of this whole length is (sic) now to any useful extent in operation. The Susquehanna division . . . the whole of the West Branch . . . the French Creek division . . . and the French Creek feeder . . . as will appear by the report of the Canal Commissioners, scarcely pay their lock keepers. . . . On the other hand, the main line of canal and rail road from Philadelphia to Pittsburgh . . . have paid a promising revenue.[72]

Ritner argued that the branches of the Main Line "are mere disjointed beginnings of an immense whole, whose plan was never perfected, and whose present condition is a sad proof of the selfishness of sectional jealousy, and of log-rolling legislation."[73] Ritner's criticism of the politics of internal improvements seems somewhat disingenuous, since his party was built in part on sectional jealousy, and by 1836 had shown a remarkable facility for legislative logrolling in its own right. Ritner himself displayed some remarkable political acrobatics as he contradicted himself in the same speech:

> While on the subject of Internal Improvements, permit me to remark that the more modern, though highly useful kinds, should not monopolize our attention and care to the exclusion of the older. This State owes much of her early prosperity to turnpikes, state and other roads, and many counties still depend upon them for access to market. Fayette, Greene, Washington, Westmoreland, Somerset, Bedford, Franklin, Adams, York, &c. have had, and still have scarcely any other reliance. The fostering care of the Legislature should be continued to them, and an enquiry instituted whether the turnpike appropriation made by the last session, was sufficient to relieve these beneficial companies. . . . It should always be kept in mind that the counties which principally rely for an outlet to market upon roads of this description, have derived little, if any benefit from canal and rail-road expenditure.[74]

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72. Governor Joseph Ritner, Governor's message to the Senate and House of Representatives of the commonwealth of Pennsylvania. Reprinted in *The Hollidaysburg Canal and Portage Register*, December 14, 1836, 2-3. This paper was one of the staunchly anti-Mason papers in western Pennsylvania and, as its name implies, an outspoken advocate for internal improvements.

73. Ibid., 2

74. Ibid., 3.

Clearly, Ritner was not forgetting the people who had first helped put anti-Masonry on the map in Pennsylvania. It is also clear that western Pennsylvania stood to benefit greatly from the course of internal improvements as charted by the anti-Masonry administration.

The anti-Masons not only inherited the Pennsylvania Public Works. They also became the custodians of the Board of Canal Commissioners. Control of the board was truly a two-edged sword. The patronage derived from it was of enormous advantage, but it also provided the opposition with a handy club to beat the party in power. The anti-Mason coalition now received a sample of the invective they had once heaped upon the Jacksonians. But the canal commissioners were now in their camp, and the anti-Mason partisans hurried to their defense.

> . . . great pains have been taken, by the enemies of our Public Improvements to destroy public confidence in them . . . their object it to destroy our public works, and thereby more extensively build up the improvements of New York on its ruins. Notwithstanding . . . our public improvements have been conducted during the past summer, much better than ever they were before. . . . The Canal Commissioners have labored very assiduously to bring about this state of affair- and to them the tax-paying farmer is much indebted for their unremitting zeal in this good work.[75]

In some ways the Main Line of Public Works became a Frankenstein's monster that no one really controlled. The canal dictated policy to the politicians, who, regardless of party affiliation, tended to behave much the same way once in office. The anti-Masons abused the power and patronage of the Public Works just as their predecessors had. During the gubernatorial campaign of 1838, one of the dirtiest, most corrupt in the state's history, the canal commissioners openly campaigned for Ritner. They often fired workers who would not pledge loyalty to the governor and demanded that new hires swear to vote for Ritner. Contract awards often went to loyal Ritner supporters instead of the low bidder. Canal boats that flew pro-Ritner banners often passed through the canals toll-free.[76]

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75. *The Hollidaysburg Canal and Portage Register*, November 30, 1836, 3. The summer noted by the author was also the first summer that the anti-Masons were in power. This more than coincidental notation reinforces the message to the traditional anti-Mason power base that they should be grateful to the current administration.

76. Wallner, *Politics and Public Works*, 164.

The impact of the Pennsylvania Main Line of Public Works on Pennsylvania, (particularly the western part of the state), cannot be assessed without a discussion of the ways in which development of the system influenced the evolution of the state's political structure. However, the public works also significantly affected the social and economic development of the region. The Main Line of Public Works worked to a remarkable degree, despite the numerous problems that arose from its technological shortcomings and the topography of the Alleghenies. The system never seriously rivalled the Erie and it never paid its way. Its most distinctive feature, the Allegheny Portage Railroad, was a technological deadend, as far as the development of railroading was concerned. Nonetheless, it was one component in a transportation network that brought western Pennsylvania into a national and international market economy. (Please see the River, Canals, and Railroads, 1825-1840 map.)

J and J PARKER
WHOLESALE AND RETAIL WINE AND
LIQUOR DEALERS,
No. 148 LIBERTY STREET

Have just received, direct from Philadelphia (by canal) an extensive supply and general assortment of foreign wines and liquors. Their present stock includes the following:

10 Pipes and 6 half pipes Cognac brandy, also Holland Gin, port, Jamaican Spirits, Irish Whiskey from Belfas (sic), N.E. Rum, Madeira, Claret, Sherry, old Port. Also-an assortment of BOTTLED WINE.

James and John Parker
Pittsburgh, July 24, 1834[77]

Whatever deficiencies Philadelphia had as a port and commercial center were certainly dwarfed by the barriers that western Pennsylvania presented for the development of a cross-state canal. Besides the massive front of the Allegheny Ridge, canal builders would also face numerous streams and rivers and much greater variations in elevation than those faced by the crews on the Erie Canal. The state could not build a purely conventional canal system. It would have to devise some technological solutions to the problems posed by the topography of the western part of the state.

77. *The Pittsburgh Gazette*, August 1, 1836, 2.

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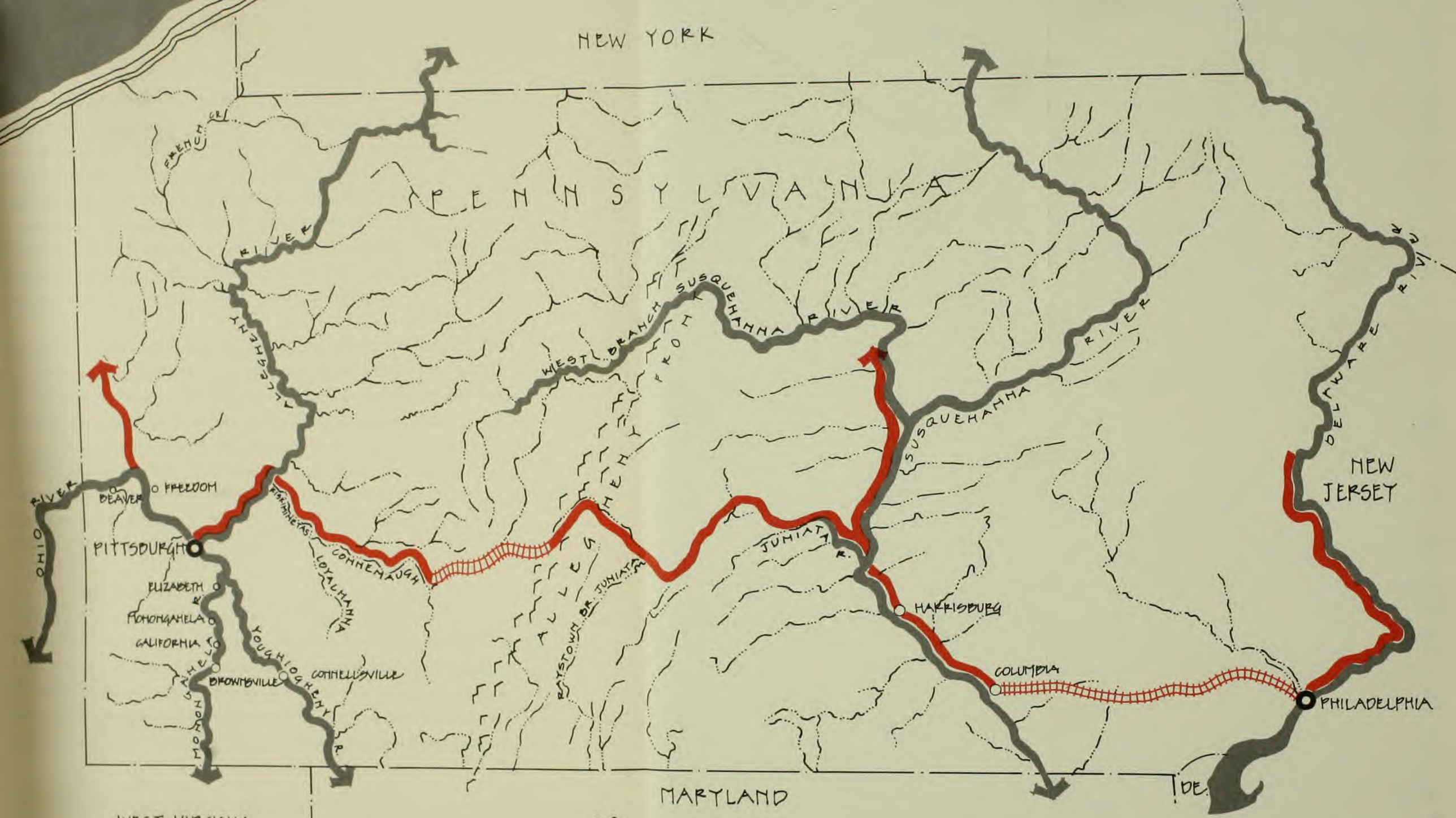
RIVERS, CANALS, AND RAILROADS

1825-1840

United States Department of the Interior • National Park Service
Southwestern Pennsylvania Heritage Preservation Commission
DSC • 957 • 20125 • Mar 94



RIVERS, CANALS, AND RAILROADS

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Early planning and design for the Main Line system commenced in 1826 without a plan for crossing the Allegheny Front. The first Canal Commission appointed to select a route had proposed an all-canal system that included a 4-mile canal tunnel through the Alleghenies. This grandiose scheme, according to an 1855 history of the Main Line, was so unrealistic that "The Commissioners . . . were certainly very far in advance of the age, the time has not even yet arrived in which some, who do not consider themselves uninformed, could hear such a proposition without finding their risible organs sensibly affected."[78] The tunnel plan was abandoned in favor of a portage railroad that would take freight and passengers over the Allegheny Ridge on a series of levels and 10 inclined planes.

The system's builders utilized other technological innovations in order to accommodate the canal to the rugged western Pennsylvania geography. The Staple Bend Tunnel, the first railroad tunnel in America, provided a shortcut for the Allegheny Portage Railroad as it travelled east of Johnstown. The canal also required dams and reservoirs to maintain flow in its channel, slackwater dams to improve navigation on the rivers, and a number of aqueducts to carry the canal over the Little Conemaugh, Conemaugh, Kiskaminetas, and Allegheny rivers and other rivers and streams along its route. The canal workers also built two 800-foot tunnels to shorten the canal route. One of these tunnels passed through Grant's Hill at Pittsburgh (see figure 4 at the end of this chapter).

By the standards of the day, the construction of the Main Line system was an enormous undertaking. Thousands of workers were employed as laborers, at one time 2,000 were working on the Allegheny Portage Railroad alone.[79] Canal construction spread disease as it carried malaria and typhoid fever into areas that had previously been free of these epidemic contagions. It also introduced the latest in a series of disruptive immigrant groups to western Pennsylvania. The Irish immigrants who made up the bulk of the canal's labor force earned a reputation, whether deserved or not, for hard drinking, hard fighting, and a transient

78. *The Main Line of the Pennsylvania State Improvements; Its History, Cost, Revenue, Expenditures and Present and Prospective Value*, (Philadelphia: T.K. and P.G. Collins, Printers, 1855), 8. One can only wonder what a psychoanalyst would make of this statement.

79. The details of the construction of the Main Line of Public Works have been extensively covered in a number of other works, including NPS, USDI, *Historic Resource Study, Allegheny Portage Railroad National Historic Site, Pennsylvania*, by Anna Coxe Toogood (Denver Service Center 1973); NPS, USDI, *The Pennsylvania Main Line Canal*, by David Fritz and Berle Clemensen; and Jacobs, *The Juniata Canal and Old Portage Railroad.*

lifestyle that unsettled and offended the established German and Scotch-Irish Americans who made up the majority of western Pennsylvania's population.

The construction of the aqueduct and tunnel in Pittsburgh provides another illustration of the political infighting that was so much a part of the Main Line system's construction and operation. Surveys of the canal route in the Western Division had determined that following the west bank of the Allegheny River was superior to that of the east bank, both in terms of cost and simplicity of construction. This would have put the canal's terminus in Allegheny City, not in Pittsburgh. Pittsburghers appealed the decision, saying that the 1826 canal legislation mandated that the chartered limits of Pittsburgh (which was true). They did not mention that they had no intention of losing valuable trade to their cross-river rival. The mayor and the Select and Common Councils of Pittsburgh then chose the Grant's Hill route, the most expensive of the three possible canal routes into the city, in order to avoid disrupting the city's development. The civic leaders promised that any cost overruns would be absorbed by the city.[80]

The Allegheny aqueduct was completed on November 10, 1829. Ten thousand observers and a "salute of 105 guns from the artillery" commemorated the event. By May of 1831, goods could be shipped the entire length of the Western Division, from Pittsburgh to Johnstown. The Allegheny Portage Railroad opened in the spring of 1834. With its completion, the Pennsylvania Main Line of Public Works was fully operational. Western Pennsylvania was now linked in a rapidly evolving national marketplace (see figure 5 at the end of this chapter).

> We are gratified to see by the Philadelphia papers, and by the "Report of the Philadelphia Board of Trade," that our Great Eastern Metropolis desires a closer connexion and intercourse with our city, and for this purpose important measures have been taken during the last month or two. We believe that this feeling is mutual, and that our intelligent merchants, manufacturers and business men generally, begin to see how vitally important it is for this city, Philadelphia and State generally, and for the Great West, that, by every radical means, and without any unnecessary delay, every facility for mutual intercourse, and for cheap and certain transportation and travelling, should be increased. The great and almost illimitable West is very rapidly filling up with a very numerous, healthy, industrious, intelligent and productive population. . . .

80. Ilisevich and Burkett, "The Canal through Pittsburgh," 355.

> Our population including the city and towns immediately around it, is about 45,000 souls. The manufacturers and mechanical products, and sales of all kinds, of goods, foreign and domestic, by all our manufacturers, wholesale and retail, and commission merchants, may be estimated at from twenty to 25 million dollars.[81]

Traditionally, the Pennsylvania Main Line Canal and, specifically, the Allegheny Portage Railroad, have been interpreted as important links in an intrastate connection between Pittsburgh and Philadelphia. But we see from the above account and many others that Pennsylvanians of that period saw it as an important component in a transportation system that linked Pennsylvania with the east coast as well as with the Ohio and Mississippi valleys. Although the system never rivalled the Erie Canal, either in terms of freight and passengers carried, or in revenue returned to the state, it still enhanced the carrying capacity of one of the country's most important transportation corridors. In so doing, the Main Line Canal and the Portage Railroad brought western Pennsylvania into a wider world.

Hollidaysburg, the eastern terminus of the Allegheny Portage Railroad, enjoyed a steady, if not explosive growth rate during the years in which the Allegheny Portage Railroad operated. The town grew large enough to support three newspapers, one of which, *The Hollidaysburg Canal and Portage Register*, began publishing in July of 1836. The paper made its sentiments and its politics clear in one of the first issues.

> The Register will be devoted in part to the promotion of Agriculture, Manufactures, and internal improvements, the three great causes of the prosperity and wealth of Huntingdon County.
>
> In political discussions the undersigned will be fair, candid, and temperate . . . On the presidential question they will advocate WILLIAM HENRY HARRISON and FRANCIS GRANGER[82]

The paper's editors identified it as a Democratic anti-Mason organ, yet it came out in support of the Whig presidential candidate and internal improvements. Clearly, regional economic interests took precedence over political ideology.

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81. From *The Pittsburgh Gazette.* Reprinted in *The Hollidaysburg Canal and Portage Register,* November 30, 1836, 2.

82. *The Hollidaysburg Canal and Portage Register,* July 2, 1836, 1. In the same issue, the paper attacked Pennsylvania's "Van Buren" congressmen and endorsed a "Democratic-anti-Mason" ticket for the 1836 elections, headed by Harrison, the Whig presidential candidate.

The paper reported on July 20, 1836, that in the previous year, between July 1 and July 20, 680,090 pounds had been logged on the weigh scales of the "Portage Road." The paper went on to note that "The amount during the same days of the same month of the year 1836 is 2,657,740 lbs. The above is exclusive of the iron, coal and lumber trade, and is agreeably (sic) to the Register kept in the Weigh scales office."[83] Hollidaysburg, which had so much to gain by the success of the Main Line system, took heart from the apparent growing viability of the system.

Pittsburgh's commitment to the canal, on the other hand, was more conditional. The Pittsburgh Gazette offered a detailed account of the merits of the three main east-west transportation corridors — the Erie Canal, the Pennsylvania Main Line System, and the Chesapeake and Ohio Canal. The paper concluded that the Pennsylvania system did not offer the best opportunity for the transshipment of Pittsburgh and other western goods to eastern markets. The Gazette argued that the Chesapeake and Ohio Canal was the route of Pittsburgh's future.

The paper examined the three routes on the basis of their ability to facilitate trade "in connection with the Ohio River and the Lakes."[84] The Erie, in the Gazette's analysis, was only one link in a system of "1008 miles - 670 canal, 145 river, 191 lake - 1377 feet of lockage, three transshipments at Albany, Buffalo, and Cleveland."[85] The Pennsylvania Main Line system fared better in the Gazette's comparative view, with only 276 canal miles and 118 railroad miles between Philadelphia and Pittsburgh, 5,514 feet in ascent and descent, with two transshipments at Johnstown and Hollidaysburg. But the C&O, by contrast, enjoyed advantages over both systems.

> when the canal shall have reached Cumberland, the distance from the tide [the paper referred to 'the tidewater at Washington City'] to the navigable waters of the West will be only 262 (miles), viz: 187 miles by the Chesapeake and Ohio

83. *The Hollidaysburg Canal and Portage Register*, July 20, 1836, 2.

84. *The Pittsburgh Gazette*, September 30, 1836, 4.

85. Ibid.

> Canal to Cumberland, 75 from thence (on the National Road) to Brownsville on the Monongahela. By this route, one transshipment, at Cumberland.[86]

The Gazette ignored a few negative factors in its promotion of the C&O route. For example, goods transported along this route required a second transhipment at Brownsville. Also, the writers chose to disregard the high cost of shipping overland by wagon. But on paper, at least, the argument appeared to have some merit.

The Gazette's partisan support illustrates two important points about Pennsylvania commerce in the 1830s. First, the southern and western parts of the state still had closer connections to Chesapeake Bay than Philadelphia. Second, and more importantly, Pennsylvanians in both the east and the west clearly saw the state's trade as more than a simple intrastate network. The Main Line made western Pennsylvania a vital passage in the evolving trade between East and West.

Despite the Gazette's clear preference for bypassing the Main Line system, the paper did not refuse advertising revenue from companies carrying freight on the Pennsylvania canal. During canal season, which ran roughly from early April to the end of November, the front page of the paper carried numerous advertisements from freight and packet (passenger) boats for transport between Philadelphia and Pittsburgh. The paper also carried ads for merchant houses that sought to establish themselves as middlemen in the East-West trade. One advertisement originally dated February 2, 1836, ran regularly through the end of that year's shipping season. It announced that the firm of Riddle, Forsyth, and Co. of Pittsburgh and Messrs. Forsyth and Atterbury of Wheeling, Virginia, "have established a house in the city of Philadelphia, with the view of transacting a Commission and Produce Business under the firm of Riddle, Forsyth and Atterbury."[87]

The firm ran a subsequent advertisement that more clearly illustrated its commercial aspirations and the extent of the trading network in which the Pennsylvania canal played a part. Riddle, Forsyth, and Atterbury of Philadelphia notified their existing and future clients that they "continue to devote their attention exclusively to sales of Western Produce, and the

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86. Ibid.

87. *The Pittsburgh Gazette*, September 1, 1836, 2.

execution of Orders for articles to be purchased in this market, or those of the adjacent cities." They assured prospective clients that "The usual advances on consignments will be made, either directly, or in the west through Messrs. Forsyth and Co., Louisville, Ky; Forsyth and Atterbury, Wheeling, Va; or Jacob Forsyth and Co., Pittsburgh, Pa."[88] Another commission merchant house, Smith, Bagaley, and Co., of Philadelphia, also notified clients and customers that they "are prepared to receive consignments of all descriptions of Western Produce, on which they will make liberal advances, direct or by either of the houses of Bagaley and Smith, or Olmstead, Smith and Co., Pittsburgh, who will attend to forwarding all Produce consigned to them."[89]

Clearly, the Main Line system served the efforts of these and other commission merchants to participate in commerce beyond the boundaries of Pennsylvania. The range of produce shipped on the Main Line reflected in the shippers' notices in the regional papers shows that the canal played a part in linking Pennsylvania with the rest of the country and Europe. On October 19, 1836, a Pittsburgh auctioneer, John M'Faden, posted a notice to customers that "The subscriber has now on the canal, and expects to receive daily, Cayenne Pepper . . . English Mustard . . . Nutmeg &c., all prime articles. . . . Also, in store, Holland Gin, Cogniac [sic] Brandy, Champaign [sic] wine, warranted first rate quality, Port and Malaga Wines, Coffee, Ginger, Gentlemen's Silk Hats, Ladies Lasting, Morocco and Leather Shoes and Bootees . . . all of which will be sold private sale on very accommodating terms.[90] This advertisement followed an earlier and much longer notice by M'Faden titled "AUCTION SALES. REAL ESTATE." The notice included an insert titled

> FRUITS
>
> The subscriber has now on the canal, and will receive in a few days, about 40 boxes Sicily Lemons and about 60 boxes Oranges, well selected and in good order: also a few barrels Lisbon and Port Wines, and Champagne in baskets. Due notice will be given of the day of sale.[91]

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88. *The Pittsburgh Gazette*, October 1, 1836, 1. This ad had been originally posted on April 25, 1836. Assumably, it had run regularly throughout the shipping season.

89. *The Pittsburgh Gazette*, July 8, 1836, 2.

90. *The Pittsburgh Gazette*, October 19, 1836, 4.

91. *The Pittsburgh Gazette*, September 30, 1836, 3.

Obviously, the shipment of luxury goods made the most rational use of the Pennsylvania canal and the Allegheny Portage Railroad, as their high rate of return offset the tolls of the Main Line system. Such products may have assumed a disproportionate profile with the consuming public. Nonetheless, the presence of such goods on the Main Line's canal boats indicates that, in however small a fashion, western Pennsylvania was participating in an international marketplace.

In 1836, two years after the completion of the system, a number of companies were operating freight and packet service between Pittsburgh and Philadelphia and regularly advertised their services in the Pittsburgh papers. These firms included the Good Intent, Swift Line, D. Leech and Co.'s Western Transportation Line, the Pennsylvania and Ohio Transportation Co., the Union Transportation Line, and the Pioneer Fast Line. The Good Intent, Swift Line advertised that it was connected to the Good Intent Steam Packet Line to Louisville.[92] The Pioneer Fast Line boasted that its packet boats and railway cars made the trip between Philadelphia and Pittsburgh in less than four days, with the comforting added benefit that their cars would be "passing over all the rail roads in daylight."[93] The Western Transportation Co. advertised that it was prepared to "transport to and from Pittsburgh and Philadelphia, 75 TONS MERCHANDISE DAILY (emphasis original) in the shortest possible time." The first two years of its operation as a complete system saw the Main Line fulfilling its intended function as a link between the Atlantic seaboard and the Ohio Valley.

A cursory review of a handful of the region's newspapers reveals that western Pennsylvania had an avid interest in international affairs, at least in those events that were unfolding in the Republic of Mexico. American immigrants and filibusters in Mexico had only recently rebelled and declared the creation of the Republic of Texas. From the level of coverage of these events in the Pittsburgh and Hollidaysburg newspapers, western Pennsylvanians were keenly concerned over the course that the Texican Revolution was taking.

A remarkable number of advertisements and notices in the papers of Pittsburgh and Hollidaysburg throughout 1836 began with the heading "News from Mexico!" Invariably, the

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92. *The Good Intent Line*, both canal boats and steamboats, collapsed in the Panic of 1837.

93. *The Pittsburgh Gazette*, November 28, 1836, 1.

notices were concerned with everything from dry goods to women's hats and carried not a shred of news on events in Mexico. Clearly, the day's marketing experts recognized that the growing conflict in Mexico was of enormous interest to the papers' readership and was an irresistible lead-in for more prosaic business of the day.[94]

The *Pittsburgh Gazette* directly addressed the controversy over the revolution in Mexico. In May of 1836, only two month after the fall of the Alamo, the paper praised President Andrew Jackson, referring to him as "General Jackson," for his moderate stance on the Texas question. Jackson had recently made a statement concerning the obligation of the United States to observe a strict neutrality "in the internal war going on in Mexico." The paper expressed relief that Jackson's letter[95] averted the threat

> to force this free and prosperous nation into a contest with Mexico, on behalf of what is called the liberty of Texas . . . a war with Mexico, in such a quarrel as that which speculators in lands and speculators in slaves . . . had nearly blown into a flame, would be one of dishonor, of suffering, and of loss incalculable.[96]

Western Pennsylvanian opposition to American intervention in Mexico was based on both political and economic considerations. Almost certainly, it expressed Whig resistance to any American expansionism that would further the cause of southern slaveholders. There is at least a hint, however, that western Pennsylvania's concerns centered upon the possibility that any conflict between the United States and Mexico would have been disruptive to the region's commercial interests. A small amount of evidence exists to indicate that Pittsburgh either had established, or sought to establish, trading relations with Mexico.

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94. On August 10, 1836, the *Hollidaysburg Canal and Portage Register* reprinted an account of the aftermath of the Battle of the Alamo. The letter was written by a Texan who had fought at the Battle of San Jacinto and had recovered Davy Crockett's journal from the baggage of a Mexican general who been at the Alamo. According to his account, Crockett and five others were captured in the final fight for the Alamo and then executed, despite the intercession of the general who had taken his journal. The register report of this version of the battle was remarkably dispassionate. Apparently, this information was more or less common knowledge at the time. The myth of the defenders of the Alamo fighting to the last man had not yet been impressed into the American consciousness.

95. Jackson was not exactly a shrinking violet when it came to intervening in another nation's territory in pursuit of what he perceived as the United States' interests. In 1818, he led American forces into Spanish Florida in pursuit of Seminole Indians, with whom the U.S. was at war. By the same token, he was not an ardent defender of the rights of not-whites. His reluctance to intervene in Mexico, therefore, probably tells us a lot about his opinion of the legitimacy of the Texan claims of independence.

96. *The Pittsburgh Gazette*, May 25, 1836, 4.

By 1846, travel and trade on the Main Line system was integrated with a more sophisticated trade network. Shipping advertisements in the Pittsburgh newspapers had increased significantly over the last 10 years, and now included large numbers of notices for steamboat travel west to the Ohio River ports, south on the Monongahela to eastern links via the National Road at Brownsville and the Baltimore & Ohio Railroad. Canal companies made up a smaller proportion of the advertisers for freight and passengers, but appeared to be flourishing nonetheless. *The Beaver Argus* reported that "On the canals, the daily packets are afloat for Cleveland and Erie: and on the river, the Erie . . . leaves at 8 AM for Pittsburgh; the Michigan at 2. for Cincinnati. . . ."[97]

The number of companies operating freight and packet service on the Pennsylvania also had increased by 1846. Only one of the companies that had been in operation in 1836, the Western Transportation Co., was still doing business. The others, like the Good Intent, Swift Line probably went bankrupt in the upheaval following the Panic of 1837. But a host of new names appear among those companies advertising their services on the canal. At least seven other firms were in operation on the canal at this time.[98] Many of these firms now advertised themselves as "Portable Boat" lines or companies. They did this to highlight the fact that transport on the Main Line system no longer required transshipment of goods from canal boats to rail cars and back again. The canal boats now were built in sections that could be loaded directly onto rail flat cars, pulled over the Allegheny Portage, and then reassembled in the canal basins.

The developing infrastructure of the canal offers some indication of the traffic passing between East and West. The Pittsburgh area alone had five canal basins; one in Allegheny Town, and four in downtown Pittsburgh. Other sections of the canal were widened to serve as improvised basins. Canal basins became centers of commercial activity as warehouses, hotels, taverns and offices were built on them to support canal traffic. With the condemnation of the original Allegheny canal aqueduct, John Roebling, who had established a wire rope factory near Pittsburgh, built its replacement. The new Pittsburgh Aqueduct was the first of

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97. *The Beaver Argus*. Reprinted in the *Pittsburgh Daily Commercial Journal*, April 11, 1846, 3.

98. One of these companies, the Reliance Portable Boat Line, was owned in part by "Jno. Mc Fadden and Co., canal basin, Pittsburgh. This is perhaps the auctioneer "John M'Faden" of ten years before. If so, he represents the potential for self-improvement for those involved in trade along the Main Line.

Roebling's cable suspension structures and one of the first in the country. Roebling's wire ropes by this time were already being applied on the Allegheny Portage Railroad, replacing the hemp ropes that were originally used.

Philadelphia commission merchants continued to advertise in the Pittsburgh papers for goods transported from the West. For example, Solis and Brothers, of Philadelphia, solicited "Skins and Shipping Furs of every description. Bought for cash at the highest market."[99] Even though the trade in beaver pelts declined after 1840, furs and skins, particularly buffalo hides, were still being taken in the West for Eastern markets. Almost certainly, they comprised an element of the trade carried on between the United States and Mexico along the Santa Fe Trail between 1821 and 1870.

> Santa Fe Traders — The following gentlemen arrived on Saturday, on the North Carolina, for the purpose of procuring Pittsburg [sic] manufactures for the Santa Fee [sic] trade - Messrs. Jno. C. Armigo, Nesta Armiga, Joseph Golreis, Mitteana Edracio, Micatante Otaro, Lantrage Floris, Ambrose Armigo, Francis Chacis, Joachim Parah, Philip Chacis.[100]

In the spring of 1846, some of the most prominent New Mexican traders involved in this trade travelled to Pittsburgh to acquire goods for trade with Mexico. Their interest in "Pittsburgh manufactures" implies that the city already had been linked to the far western trade that extended to Santa Fe and Chihuahua, Mexico. According to an article reprinted from the St. Louis Republican, Pittsburgh had stolen a march on a city far more conveniently situated to provide support services for the traders of the Santa Fe Trail.

> We learn that this (the Mexican trade) will be very considerable this year. . . . Large orders have already been given for wagons, harness, &c. at Independence, and still larger orders will have been filled in Pittsburgh. OUR (emphasis original) mechanics, it seems are not so careful of their interests as they might be, in not turning their attention to this branch of business.[101]

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99. *The Pittsburgh Daily Commercial Journal*, April 16, 1846, 1.

100. *The Pittsburgh Daily Commercial Journal*, April 6, 1846, 2.

101. Reprinted from the *St. Louis Republican*. *The Pittsburgh Daily Commercial Journal*, April 7, 1846, 2.

Some of the luxury items transported on the Pennsylvania canal would have commanded premium prices in the trade West. One Philadelphia merchant house, Wood, Abbott and Wood, specialized in the trade of English woolens with the western United States, Mexico, and South America. The firm's original connections to southern markets had been through New Orleans. By the 1830s, Richard Wood, the head of the firm, became increasingly involved "in the improvement of transportation between Philadelphia and the hinterland. Wood's concern with this . . . development was of fundamental importance to the enlargement of his own market possibilities as well as to the economic growth of Philadelphia."[102] Some portion of Wood's commercial ties with Mexico may still have been maintained overland along the Independence-Santa Fe corridor.

The outbreak of hostilities between U.S. and Mexican forces in May 1846 disrupted American-Mexican commerce. Even with this change of fortune, however, western Pennsylvania maintained some trading ties with the Southwest. According to an interview conducted many years after the end of the canal era in western Pennsylvania, the canal boats tied up in the basins at 10 P.M., but "Old timers claim that in rush seasons like during the Mexican War, boats ran all night on the Juniata Canal."[103]

By the late 1840s, however, the Pennsylvania Main Line system was already poised on the edge of an irreversible decline. The system's deficiencies had already made themselves apparent to the Philadelphia merchant community that had pressed so hard for the creation of the system in the first place. Philadelphians were now clamoring for the creation of a cross-state rail line, to enhance the city's competitive position with Baltimore and the expanding Baltimore & Ohio Railroad (B&O).[104] Never straying far from its traditional trading relationship, western Pennsylvania agitated regularly for the extension of the B&O's charter through Cumberland along the Youghiogheny to the Ohio. At one point, the state's western counties threatened secession if the charter were not granted. Pushing for the a direct line between Philadelphia and Pittsburgh, Eastern interests resisted such an extension.

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102. Frederick J. Glover, "Philadelphia Merchants and the Yorkshire Blanket Trade, 1820-1860," *Pennsylvania History* 28 (1961):133.

103. *The Altoona Tribune*, October 27, 1939, box 1-1-43 to 12-31-43, Hoenstine Library, Hollidaysburg, PA.

104. Wallner, *Politics and Public Works*, 237.

The system of public works had accumulated a staggering debt in the years of its operation. English investors held as much as 2/3 of the Pennsylvania improvement debt. Much of the debt was in the form of bonds originally purchased by the Bank of Pennsylvania, an institution whose majority owner was the state of Pennsylvania. This put foreign investors in the curious position of owning a portion of Pennsylvania.[105] The Main Line, accumulating a $40 million debt by the end of its operation, was not a particularly attractive investment.

The collapse of the Anti-Masonic movement in the late 1830s and the more intense sectional differences that followed the Mexican-American War gradually pushed internal improvements out of the center of the political arena. The Pennsylvania Main Line Canal and the Allegheny Portage Railroad became instantly superfluous when the Pennsylvania Railroad (PRR) completed its line to Pittsburgh.

Before the PRR breached the Allegheny Front with the completion of the Horseshoe Curve and the Gallitzin Tunnel, however, it was still dependent upon the Allegheny Portage as a means to get its cars over the Alleghenies. J. Edgar Thomson, the chief engineer of the Pennsylvania Railroad, wrote to W. S. Campbell, the engineering superintendent of the Allegheny Portage Railroad, requesting that he keep the portage open until the 9th of December, rather than close on the 30th of November. He also requested that Campbell fix a date for closing the portage, rather than leaving closure to be determined by weather conditions. This foreshadows, in a very small way, the increased level of rational business planning and management that the rail industry would bring to transportation in western Pennsylvania.

The mere fact of writing this letter probably galled Thomson, an engineer in his own right, as it acknowledged the Pennsylvania Railroad's continued dependence on a failed technology. But with the completion of the Horseshoe Curve west of Altoona in 1854, the days of the Allegheny Portage were effectively ended. In 1857, the Pennsylvania Railroad acquired the Main Line right-of-way for $7.5 million, a fraction of the debt it had accumulated over the previous 30 years.

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105. Harvey Hirst Segal, "Canal Cycles, 1834-1861. Public Construction Experience in New York, Pennsylvania, and Ohio." (PhD. diss., Columbia University, 1956), 130.

The development of the Main Line system in western Pennsylvania paralleled the continued development of transportation on the region's navigable rivers. Even as Pittsburgh's shipbuilding industry settled into a decades-long decline, steamboat technology began to revolutionize the transportation of goods and passengers on the western rivers. These developments significantly shaped social, economic, and political growth in the trans-Appalachian West.[106]

Steam technology for river transportation was first introduced in the eastern United States in the last decades of the 1700s. A Philadelphia entrepreneur named John Fitch tried and failed before 1800 to introduce regular steamboat service on the Delaware River. Fitch and others had long advocated the use of steam power as an answer to the problem of upstream navigation on the Ohio and Mississippi rivers. The first voyage of Robert Fulton's Clermont on the Hudson River in 1807 demonstrated the potential practicality of steamboats for commercial river transport. But their application on the swiftly flowing western rivers depended on the development a relatively high-compression steam engine. The construction of a steamboat for western service followed very quickly after Fulton's launch of the Clermont. Fulton, in association with other boat builders and developers, launched the steamboat *New Orleans* from Pittsburgh in 1811. This vessel travelled downstream to the city of New Orleans, where it served in the Mississippi trade until sunk in 1814.

The *New Orleans* did not demonstrate the practicality of upstream navigation as dramatically as did another Pennsylvania boat. The steamboat *Enterprise*, a product of Brownsville, on the Monongahela River, completed a roundtrip between New Orleans and her home port in 1815. This steamboat made an early, and convincing statement about the practicability of steam navigation on the Ohio-Mississippi river systems. The rapid construction of the *New Orleans*, the voyage of the *Enterprise*, and the early development of steamboat construction in the Ohio-Monongahela drainage all testify to the powerful incentives presented in the trans-Appalachian trade even in the early 1800s. It also presages the vital role of Pittsburgh and the surrounding region in the era of steamboat transportation in the trans-Appalachian West.

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106. Much of the information in the following account may be found in Louis C. Hunter, *Steamboats on the Western Rivers*, (Cambridge: Harvard University Press, 1949).

An obvious but critical element that spurred development of transportation on the river systems of the trans-Appalachian West was the region's explosive population growth in the period 1800-1860. The population of the United States experienced an astonishing rate of growth in this period, doubling roughly every 22 years. The rate of growth in the western states and territories, where the population doubled every 10 years between 1810 and 1830, surpassed the national rate. By 1840, one in three Americans lived west of the Appalachians.[107]

Pittsburgh's growth rate easily matched that of the region as a whole. The city's population grew tenfold between 1810 and 1850, from 4,768 to 46,601. Pittsburgh owed this remarkable growth rate to several factors. Its rapidly developing industrial base certainly played a significant role, surviving two major economic downturns in 1819 and 1837. The city became the leading industrial center in the West. Pittsburgh's strategic location at the forks of the Ohio made it the logical focus of commercial and industrial activity for the areas drained by the Allegheny and Monongahela rivers and their tributaries. Many of the communities on the eastern side of the Allegheny watershed were tied to Pittsburgh as well, via the Pennsylvania Road and the Pennsylvania Main Line canal. A large number of the region's iron masters, distillers, and farmers turned to Pittsburgh as the conduit to the expanding markets in the Ohio and Mississippi valleys. These factors combined to establish the city as one of the five leading western river ports between 1820 and 1860 (see figure 6 at the end of this chapter).[108]

Growth in the trans-Appalachian West was overwhelmingly, but not exclusively rural. Besides Pittsburgh, a number of other cities grew rapidly in the decades before the Civil War. Cincinnati; Wheeling, Virginia; Louisville; St. Louis; Natchez; New Orleans; and smaller towns created the urban element that gave the West the commercial, industrial, and cultural links necessary to the development of the region's economic and social diversity. Far from seeking to escape life along the more developed Atlantic seaboard, many emigrants to the West sought to re-create, as much as possible, the conditions and quality of life they had known

107. Davidson, *Nation of Nations*, 1:354.

108. The other leading ports were Cincinnati, Louisville, St. Louis, and New Orleans.

before they had crossed the Alleghenies.[109] The rise of this urban setting also tied western Pennsylvania into a rapidly developing interstate network. Pittsburgh's trade for the most part was conducted with nearby cities, primarily Louisville and Cincinnati. But the city also sent steamboats as far west as St. Louis and as far south as New Orleans, the southern terminus of western river navigation.

Pittsburgh and its hinterland contributed significantly to the evolution of commerce and transportation in the West. The towns of the Ohio valley dominated the steamboat construction industry in the West of the Appalachians, and by 1831, Pittsburgh had become the largest steamboat building center in the West. The same factors that had earlier made Pittsburgh a viable shipbuilding port also helped propel it to a position of leadership in the construction of steamboats. The city's well-developed industrial base contained the necessary foundries, rolling mills machine shops, and skilled labor force to produce the iron fittings necessary for construction. Most important, Pittsburgh craftsmen provided the technical expertise to produce the high-pressure steam engines that were essential to western navigation. Pittsburgh held a leading position in this obviously vital field throughout the steamboat era. The region's extensive forests yielded the timber necessary for the boats' hulls and superstructures, and its mines provided the coal for fuel.

The steamboat industry spilled over from Pittsburgh into other river cities and towns in western Pennsylvania. Shousetown, Freedom, and Beaver along the Ohio and Brownsville along the Monongahela all were home to steamboat builders. Brownsville was the oldest and most important boatbuilding center on the Monongahela. The boatyards at Brownsville built the first steamboat to make a round-trip from the headwaters of the Ohio to New Orleans, and Brownsville remained a steady producer of steamboats for much of the 19th century. Other Monongahela boatbuilding centers were Elizabeth, a serious rival to Brownsville, as well as Monongahela, Belle Vernon, McKeesport, and California. The boatyards at California did not begin operations until 1852, but the town's boatwrights laid 131 hulls during the next 27 years.[110]

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109. Wade, Richard C. *The Urban Frontier: Pioneer Life in Early Pittsburgh, Cincinnati, Lexington, Louisville, and St. Louis.* (Cambridge: Harvard University Press, 1959), 34, and elsewhere.

110. John Kent Folmar, "The Monongahela River Steamboat Industry: California, 1852-1879," *Western Pennsylvania Historical Magazine*, October 1981, 392.

The Allegheny and Monongahela rivers were also important transportation corridors for the exploitation of the region's vast natural resources. The development of navigation along the Monongahela facilitated the shipment of coal from the rich bituminous fields of southwestern Pennsylvania. Steamboats played virtually no role in the early carriage of coal, other than their own fuel, but their use as tugs in the 1850s greatly enhanced shipment from the coalfields to the furnaces at Pittsburgh. The traffic on the Allegheny was not as developed as that on the Mon and the Ohio, but it still played an important role in both regional and national commerce. The forests of the upper Allegheny produced enormous quantities of lumber. Much of this was transported downstream in log rafts that travelled as far south as New Orleans and as far west as the Missouri River. Western Pennsylvania's combination of raw materials, strategic geography, well-developed industrial infrastructure and transportation corridors established the region as one of the most important components in the dramatic transformation of the trans-Appalachian West before the Civil War (see figure 7 at the end of this chapter).

Pittsburgh's rise as the preeminent steamboat building center in the West also helped to revive the city's long dormant shipbuilding industry. Shipbuilding enjoyed a resurgence in the United States after 1840. American shipwrights began to employ steam technology for motive power and iron for a structural material. As a leader in the construction of engines for steamboats, in addition to its other manufacturing and resource bases, Pittsburgh was well suited to reenter the shipbuilding industry.

The federal government provided the initial impetus to the city's manufacturers to expand into shipbuilding. Pittsburgh became the birthplace of the first American iron warship. In 1841, the U. S. Navy chose Pittsburgh as the site of construction of an iron steam warship for duty on the Great Lakes. The Pittsburgh firm of Stackhouse and Tomlinson constructed the warship at their yard on the Allegheny, dismantled it for transport by canal to Erie, and reassembled it as the U.S.S. Michigan. On the heels of the development, the United States Revenue Service commissioned three iron revenue cutters from Pittsburgh shipyards for duty on the Great Lakes and the Gulf of Mexico.

Pittsburgh shipyards built a number of other vessels for the Navy in the 1840s. They also built commercial vessels on contract for east coast shipping companies that were attracted by

Pittsburgh's lower material and labor costs. Shipbuilding in Pittsburgh continued on a steady, though not spectacular pace until brought to a temporary halt by the Panic of 1857. The beginning of the Civil War brought a brief resurgence to this industry, but a major post-war drop in American shipbuilding continued through the end of the century and up to the beginning of World War I. Pittsburgh, a minor factor in this industry, dropped completely from sight.

The Civil War also provided great impetus to Pittsburgh's steamboat industry. By 1860, however, the end of the grand era of river transportation was already in sight. Both the Baltimore & Ohio and the Pennsylvania railroads had reached Pittsburgh and were sending their main lines into the western states that had once depended on the rivers as their major transportation arteries. The level to which technology could improve river navigation was actually quite limited. The length of meandering streams, irregular water levels, snags, falls, sandbars, and awesome boiler explosions that sank western steamboats with disheartening frequency, made life precarious for the country's brown water sailors. All of these problems were beyond the mitigating abilities of 19th century technicians.

Relatively modest rail technology, on the other hand, had reached the Mississippi River by the beginning of the Civil War. Improvements in motive power and standardization of track gauges, the advantages of economies of scale that encouraged the creation of large corporate rail companies, the creation of an efficient management bureaucracy, and a sympathetic government attitude to the development of private enterprise all contributed to rail's explosive growth in this period. Railroads would soon eclipse both canal and river transportation, and revolutionize the American economy of the 19th century.

FIGURE 4: PENNSYLVANIA MAIN LINE CANAL — CANAL BASIN AND WEIGH LOCK AT JOHNSTOWN. The main line system created an extensive infrastructure to support the canal's commercial activities. *Courtesy of the Railroaders Memorial Museum, Altoona, PA.*

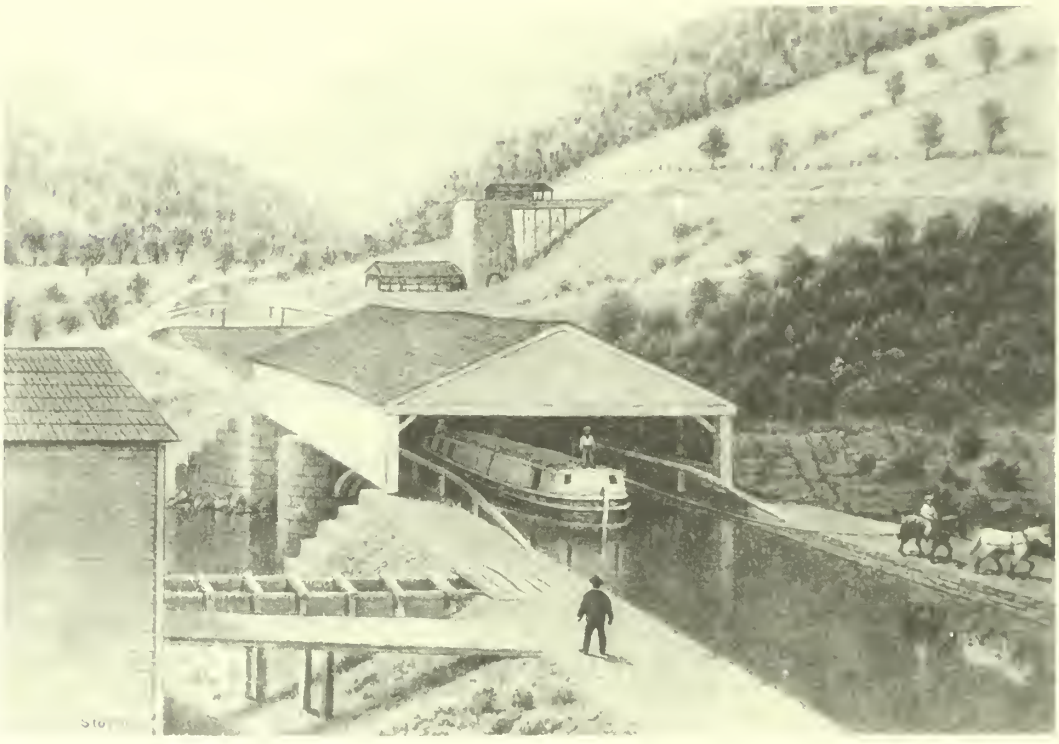
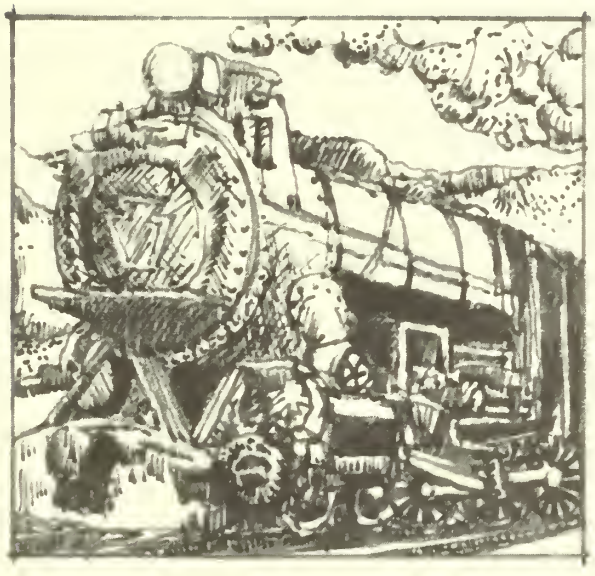


FIGURE 5: PENNSYLVANIA MAIN LINE CANAL — FIRST AQUEDUCT OVER THE LITTLE CONEMAUGH RIVER, JOHNSTOWN. The canal also required significant technological improvements to overcome western Pennsylvania's demanding topography. *Courtesy of the Railroaders Memorial Museum Altoona, PA.*

Figure 6: Steamboat Engraving. This early engraving captures the diverse and dynamic character of one of the West's largest river ports. The vessel at far left appears to be an oceangoing side-wheeler. Pittsburgh, n.d. *Courtesy of the Railroaders Memorial Museum, Altoona, PA.*

Figure 7: Coal Barges and Steamboats at the Forks of the Ohio. This early photograph shows how the focus of river traffic changed in response to Pittsburgh's increasing industrialization, n.d. *Courtesy of the Pennsylvania State Archives, Harrisburg, PA.*



III. A Transportation Revolution: Railroads and the Rise of an Industrial Order

The development of the railroad and the development of both the state of Pennsylvania and the United States are intimately bound up together. In the years following the war of 1812, the port cities of Baltimore, Philadelphia, New York, and Boston began to compete for dominance of the western trade. Transportation routes and technologies proved to be a critical factor in the fates of these cities and of the western communities with whom they traded. Canals played a large role in the race for commercial dominance, but they forced an early debate over the feasibility of railroad development. Those who engaged in the early debates sensed that the new technology called the railroad would have great economic and social repercussions. But few could have imagined the nature and extent of the railroad's impact on the economic, technological, material, social, and cultural life of the United States.

The railroad as a means of transporting passengers and freight first appeared in England in the mid-1820s.[111] In September 1825, the Stockton & Darlington began operations between Stockton and Darlington in the coal mining area of Durham County, England, south of Newcastle. Surveyed and designed by George Stephenson, the Stockton & Darlington employed both steam-powered locomotives, designed by Stephenson, for pulling cars on level ground and steam-powered inclined planes, designed by Stephenson's son Robert, for pulling cars up and letting them down the steep grades along the 12-mile line. George Stephenson had gained design and operating experience with steam locomotives in the region's coal mining industry. After completing the Stockton & Darlington, he then undertook the surveying and engineering work for the Liverpool & Manchester Railway, the railroad that captured the western world's attention in 1829 when the Rainhill trials were conducted to determine the best locomotive design for the railroad. In front of thousands of spectators, engineers, mechanics, and scientists, locomotives designed and built by four different engineers competed over several days for both honor and a monetary prize. Robert Stephenson's *Rocket* captured the 500-pound prize while also demonstrating to skeptical investors in the Liverpool & Manchester that steam-powered locomotives were not only feasible but were also desirable.[112] England underwent a railway boom that would soon be followed by one in the United States.

Both of George Stephenson's pioneering railroads inspired merchants, capitalists, and engineers in the United States who, in the wake of the completion of the Erie Canal, were aggressively searching for new modes of transportation. The Erie Canal was formally completed in October 1825, and its construction set off a canal craze in the United States. As early as 1819, when the first section of the state-financed Erie was opened, the ultimate success and impact of the canal became evident: heavy traffic on the first and successively opened sections generated revenue from tolls, thereby aiding the canal's completion, and New York City appeared poised to dominate the western trade.

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111. Peter Mathias, *The First Industrial Nation: An Economic History of Britain, 1700-1914* (New York: Charles Scribner and Sons, 1969).

112. Samuel Smiles, *The Life of George Stephenson, Railway Engineer* (London: John Murray, 1857). For more recent work on the Stephensons and their railway work, see L.T.C. Rolt, *George and Robert Stephenson: The Railway Revolution* (London: Green and Co., Ltd., 1960), and Robert E. Carlson, *The Liverpool and Manchester Railway Project* (Newton Abbott: David and Charles, 1969).

To merchants of Philadelphia, Boston, and Baltimore, the solution to the problem seemed simple: build a competitive canal westward from their own respective cities. But the solution was not that simple, especially for those in Philadelphia and Baltimore. First, unlike the New York's Erie Canal, canals built westward from Baltimore and Philadelphia would have to cross the formidable Allegheny Mountains, thereby posing enormous engineering and operating problems. Second, the apparent success of Stephenson's Stockton & Darlington railroad, though only 12 miles long, raised the question of whether a railroad might not be a better solution to these cities' problems. Yet engineering knowledge about railroads was virtually nonexistent in the United States in the 1820s. This fact notwithstanding, merchants, capitalists, politicians, and the few existing engineers knew that the critical question, however, was not whether to try to compete with New York and its Erie Canal but whether to build a canal or a railroad. Philadelphians and Pennsylvanians would face this question head-on in the mid- to late 1820s.[113]

The state of Pennsylvania established a three-member board of canal commissioners in late March 1824 to report on possible routes for and the feasibility of a canal from Philadelphia to Pittsburgh. At this time, the Pennsylvania Society for the Promotion of Internal Improvements was organized to gain and diffuse technical and commercial knowledge about internal improvements in other states and foreign countries. By March 1825, the society had published eight technical papers on turnpikes, canals, and railroads and distributed 1,000 copies of those papers throughout the commonwealth. The Society moved still more aggressively in early 1825 when it sent William Strickland, a Philadelphia architect and engineer (a protege of the English-born and trained Benjamin Henry Latrobe), to England and Europe to investigate firsthand the state-of-the-art turnpikes, canals, and railroad systems operating there. By April 1825 Strickland began to send back detailed and exquisitely illustrated reports of his findings, which were published in 1826 in a bound volume entitled *Reports on Canals. Railways. and Other Subjects.*

Strickland's observations and his report proved to be of major significance to the history of internal improvements in Pennsylvania. Upon his return to the United States, he served on

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113. Julius Rubin, "Canal or Railroad? Imitation and Innovation in Response to the Erie Canal in Philadelphia, Baltimore, and Boston," in *Transactions of the American Philosophical Society*: 51 (1961). An excellent treatment of the canal vs. railroad question is provided.

a newly appointed board of canal commissioners to determine a route for a canal from Philadelphia to Pittsburgh. Unlike the earlier board's report, the new board dropped the idea of a canal over the Alleghenies because of the lack of a sufficient water supply. Instead, the board recommended a portage railroad over the Alleghenies consisting of five inclined planes separated by level areas. Canal boats would be transported on rail carriages over the portage railroad.

Pennsylvania's legislature balked at this part of the board's plan. It authorized construction of the proposed canal on each side of the Alleghenies but called for a reinvestigation of the transmountain route. After almost three years of study and debate about the best way to get over the mountains, the board had not convinced the legislature of the merits of its original recommendations. In December 1828, the board appointed Moncure Robinson as chief engineer and charged him with investigating the possibility of building a canal, railroad, or turnpike over the Alleghenies. Like Strickland, Robinson had surveyed transportation developments in England and Europe. When his report was submitted in November 1829, it reaffirmed the use of a portage railroad consisting of inclined planes with stationary steam engines.[114]

The legislature again balked at Robinson's recommendations and created a new Board of Engineers to survey a different route. In its report the new board again confirmed the broad outlines of the earlier recommendations by Strickland and Robinson. The report stated categorically that the lack of a summit water supply made a canal over the Alleghenies technically impossible. Finally, in March 21, 1831, the Pennsylvania Legislature voted to authorize the construction of the Portage Railroad, five years after its first authorization to begin construction of a canal route to the West.

When the Portage Railroad was completed in March 1834, it was one of the first railroads built and operated in the United States. Its total cost to the state of Pennsylvania was fixed at $1,860,753, but additional costs would be incurred both in equipment and operations. The railroad was hailed as an engineering wonder by knowledgeable engineers and the public.

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114. Robinson's report, which appeared in the *Pennsylvania House Journal*, vol II, doc. 138, 1827-1828, is reprinted in the *Transactions of the American Society of Civil Engineers* 15 (1886): 183-202.

David Stevenson, a British civil engineer, traveled over the Portage Railroad when he toured the United States and commented about it in his 1838 book as follows:

> [America] now numbers among its many wonderful lines of communication, a mountain railway, which, in boldness of design, and difficulty of execution, I can compare to no modern work I have ever seen, excepting perhaps passes of the Simplon, and Mont Cenis, in Sardinia; but even these remarkable passes, viewed as engineering works, did not strike me as being more wonderful than the Allegheny [Portage] Railway in the United States."[115]

Although an impressive piece of early American engineering, the Portage Railroad soon became obsolete as the Pennsylvania Canal itself became obsolete. Advanced railroad technology — in New York and Maryland — drove this process of rapid obsolescence.

Indeed, the very existence of the Pennsylvania Main Line Canal and the enormous sum of money that the state and various counties had poured into the construction and operation of the canal delayed or stunted railroad development in Pennsylvania's key transportation corridors, including that occupied by the Main Line of Public Works. "Both Pennsylvania and Ohio levied special taxes on certain traffic carried by railroads which competed directly with canals."[116]

The Portage Railroad and the other parts of the Pennsylvania Main Line system represent the physical manifestation of a philosophy that prevailed in Pennsylvania during much of the 19th century — the "state as entrepreneur . . . shaping decisively the contours of economic life."[117] As with any entrepreneur, the government used a variety of tools to promote economic growth in Pennsylvania, including transferring new technology to the state, funding the development of new knowledge, skills, and technologies, and pushing the limits of the new technology to such a degree that old technologies rapidly became obsolete. Pennsylvania spent some $100 million to build and operate the Main Line Canal and railroad system.

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115. David Stevenson, *Sketch of the Civil Engineering of North America* (London: John Weale Architectural Library, 1838), 266.

116. Taylor, *Transportation Revolution*, 75 and 85.

117. Louis Hartz, *Economic Policy and Democratic Thought: Pennsylvania, 1776-1860* (Cambridge: Harvard University Press, 1948), 289.

Before private capitalists would be willing to invest heavily in enterprise, societies had to invest a certain amount of their capital to promote the general welfare. Investment in transportation systems, communications systems, etc. was thus investment in the general welfare and a precondition for sustained economic growth. The Pennsylvania Main Line canal and railroad system fall under this category. Due in part to this support, the railroad in the United States eventually lowered transportation costs, increased the size and extent of markets, and spurred demand for resources for construction and operation of the railroad.

To the south, the Baltimore & Ohio Railroad had been the Baltimore merchants' answer to the question of "canal or railroad?" and the line pioneered many aspects of railroad development. Chartered in 1828, the B&O stands out in American history because of its very efficient self-promotion and also because the federal government effectively became a partner in much of the engineering of the railroad through the loan of a large number of West Point-trained engineers to survey and lay out the railroad's route.

The railroads' demand for resources spanned a number of other industries. Early American railroads depended almost entirely upon imports of British iron rails. But with the passage of the tariff of 1842, American iron producers sought to enter the market for iron rails. Soon, some 15 iron rail mills began operation, but 13 collapsed in 1848, owing to foreign competition. British iron producers sold rails in the United States in exchange for railroad securities and bonds, thus attracting business from the railroads because the companies did not have to pay cash for the rails they purchased. U.S. iron manufacturers found themselves principally involved with rerolling worn British rails. Railroads consumed approximately 17% of the total increase in iron output in the United States in the 1840s, a relatively insignificant amount.

Most early iron rails were made in Britain rather than in the United States. Planners of the Allegheny Portage Railroad purchased both the iron strapping and the rolled iron "T" rails in Britain in spite of protests from Pennsylvania iron manufacturers. Indeed, British-made iron rails dominated American railroad construction, a fact that led to the passage of a $25 per ton tariff on bar iron (including rails) in 1842.

though the Tariff of 1842 provided an important incentive for American iron makers to increase capacity, their efforts met with stiff competition from the British iron industry. Perhaps as many as 20 rolling mills entered rail production in the United States after the tariff went into effect. The estimated total annual capacity (for rails and plate) of iron rolling mills in the United States reached between 44,000 and 51,000 tons by 1846, but revision of the tariff again in that year and decline in British consumption of rails led to a vast increase in rail imports from Britain. In 1846, British rail imports totalled a mere 6,000 tons, but by 1850 that figure had skyrocketed to 142,000 tons.[118] Under such pressure, many American rail mills could not compete and went out of business. Domestic production of rails fell short of 22,000 tons in 1849.

One of those competitive mills was the Great Western Iron Company, located at Brady's Bend on the Allegheny River in Armstrong County. Built in 1841, the mill soon began to roll edge rails and by 1846 was producing "T" rails. But in 1849, the mill failed. New owners restarted the mill as the Brady's Bend Iron Company, which continued to roll iron rails until 1873, when the mill could no longer compete with the newer technology of steel rail manufacture. But during its heyday, the Brady's Bend mill had rolled considerable quantities of iron rails, e.g., 7,533 tons in 1856 and single orders of 2,000 tons during the late Civil War.[119]

That the Brady's Bend rail mill survived at all is remarkable, given that after 1849 British imports continued to rise. By 1853, 290,930 tons of iron rails came from Britain according to official reports, but the American Iron and Steel Association reported that number as 320,352 tons, when domestic production had risen to only 78,450 tons. Between 1849 and 1854, British rail imports constituted roughly 80% of the rails laid in the United States. Yet after 1854, the picture began to turn around. American makers added capacity while the British rail producers grew increasingly wary of taking American railroad securities as payment.[120] Technological change also played a role in stemming the massive flow of British rails into the United States, and western Pennsylvania stands out as the leader in this process.

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118. Fishlow, *American Railroads*, 136.

119. James M. Swank, *Progressive Pennsylvania: A Record of the Remarkable Industrial Development of the Keystone State*, (Philadelphia: Lippincott, 1908), 205-06.

120. Fishlow, *American Railroads*, 137-43.

In 1853 the Cambria Iron Company was founded in Johnstown, Cambria County. Unlike most ironmaking enterprises, the Cambria works was constructed as an integrated mill. It engaged in all aspects of ironmaking, from smelting to refining to rolling.[121] Cambria's iron smelting operations relied upon both old and new technologies. On the one hand, it had four charcoal blast furnaces; but on the other, it also contained four coke-fired blast furnaces, which represented the wave of the future. The size of the coke-fired furnaces could be far larger than was possible with charcoal smelting, and the coke furnaces could draw upon the relatively abundant mineral resources of the Johnstown area.

In 1854, Cambria superintendent John Fritz began a series of process innovations that dramatically improved productivity and the quality of iron railmaking. In 1856, he built a new type of rail rolling mill, a mill that became known as the three-high mill. Until Fritz's innovation, rails were rolled by passing hot metal though a pair of rolls. After the newly and roughly formed rail came out of the rolls, it was passed back over the set of rolls to its original starting point and was then put through the rolls again. This operation continued until a satisfactory rail was produced. But as Fritz came to realize, this process was not only slow, but it was also problematic in that the rail lost heat rapidly. Rerolling a rapidly cooling rail often produced cracks in the rail, ruining the whole piece.

Fritz's three-high mill eliminated these problems. By adding a third roll on top of the original two, Fritz was able to roll rails in two directions — to pass the initially rolled rail back through the stand of rolls, thereby quickening the process and avoiding the problem of working metal that was too cold or having to reheat a rail to get it rolled correctly. Fritz designed the three-high mill and supervised the erection and start-up of the mill. By the end of July, the roll mill had been proven successful. Fritz wrote that the Cambria plant soon was producing 30,000 tons of rails a year "without a hitch or break of any kind, thus making the Cambria Iron Company a great success, and giving them a rail plant far in advance of any other plant in the world."[122]

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121. It should be noted, however, that the vertical integration of the Cambria Iron Works was typical of iron-rolling firms in the United States. An integrated ironworks included a blast furnace to produce pig iron and puddling furnaces to convert pig to wrought iron in addition to a rolling mill to roll the malleable iron into finished products.

122. Quoted in Swank, *Progressive Pennsylvania*, 208.

The three-high mill, coupled with the other process reforms that Fritz made at Cambria, turned the works from an unprofitable venture into a successful enterprise, one in which important innovations would continue to be made. As Frank Jones, an ironmaster at Cambria later wrote, Cambria was "the cradle in which the great improvements which revolutionized the rail mills were rocked."[123]

In this climate of innovation, William Kelly, a Pittsburgh-born resident of Eddyville, Kentucky, carried out in 1857 and 1858 a series of inconclusive experiments at Cambria trying to use air to remove carbon from pig iron, thus making it more malleable. Although not successful, these experiments spurred Kelly to continue to work on his process, which was eventually embodied in patents controlled by the Kelly Pneumatic Process Company, a company owned in part by Daniel Morrell, the manager of the Cambria works who had hired John Fritz.

Cambria stands as one of the pioneers of the Bessemer process in the United States, the site of the sixth installation of a Bessemer plant. Cambria's works represented an improvement over the previous five plants. The Bessemer plant at Cambria not only symbolized the owners' continuing commitment to innovation in rail manufacture, it also served as "the training ground for the countless young men who entered the iron industry in America."[124]

By 1860, rails constituted 40% of all rolled iron produced in the United States, and rail mills constituted the largest and most advanced of the iron mills in the U.S. Of the six integrated iron works in this country that year, five produced rails. Between 1856 and 1860, the railroad consumed 21% of U.S. pig iron. After the introduction of the Bessemer process, the railroad's influence on market grew more dramatically. Between 1867 and 1891, rails consumed more than half of all Bessemer steel production in each year, and in the period between 1867 and 1880, the average was in excess of 80%, all while iron and steel output in the United States was rising dramatically.

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123. Quoted in Elting Morison, *From Know-How to Nowhere* (New York: Basic Books, 1974), 81.

124. McCollough, *Alexander Holley and the Makers of Steel*, 229.

Antebellum railroads provided a powerful demand for machinery and machine-building skills and equipment. In the 1840s, 68 machine shops, manufacturing machinery for steamboats, employed about 4,800 workers, but the same year, locomotive manufacturers alone had almost 4,200 workers on their payrolls. Yet in very few instances did locomotive manufacturers begin *de novo*. Most of them had been engaged in some type of machinery manufacture (marine engines, textile machinery, etc.) before entering the locomotive business. Nevertheless, railroad demands led to rapid growth of the machine-building sector in the United States.

Railroads also became large-scale consumers of coal. Although early locomotives burned wood, railroads eventually turned to coal-burning locomotives once the problems with burning coal were solved. In the antebellum period, the railroad played little role as a direct consumer of coal as fuel. In the post-Civil War decades, however, the railroad became a major consumer (and, of course, hauler) of coal. Between 1880 and 1890, the railroad burned 20% of total coal consumed in the U.S.

The railroads played a major role in changing American agriculture, particularly in the direction of trade flows. For example, "The shift [of agricultural goods] away from New Orleans between 1849 and 1860 is exactly matched by the increased flow to Philadelphia and Baltimore, while New York's share remains constant."[125] Indeed, the railroad's greatest impact on the American economy in the antebellum period was probably in the area of agriculture rather than industry.

Even before the Civil War, the railroad provided the rapidly expanding grain belt of the United States more efficient access to Eastern markets than canals or rivers. Thus occurred a vast redistribution of American agriculture, away from Eastern agricultural areas to more productive areas of the old Northwest and the new Midwest. As Alfred D. Chandler pointed out, not only was there a change in the flow of midwestern agricultural products from the port of New Orleans, there was also a change in the flow of southern products from that port: "In 1857 the Pennsylvania carried from Pittsburgh to Philadelphia 733,651 pounds of cotton;

125. Albert Fishlow, *American Railroads and the Transformation of the Antebellum Economy* (Cambridge: Harvard University Press, 1965), 291.

in 1859 it took 17,897,569 pounds; and in 1860, 28,673,305. This last amount was more cotton than all the mills of Lowell consumed in 1845, one of the city's most prosperous years."[126]

As part of this redistribution of American agricultural products, food processing industries grew up in the new agricultural areas. Thus the Midwest became the paramount region for meat packing, flour milling, and distilling. Clearly, the railroad was a significant player in the antebellum economy, although not "indispensable", at least in the 1850s. The American economy would have grown during this time in any case, although at a somewhat lower rate.[127]

Alfred D. Chandler's work stands out as important interpretive work about the significance of the railroad in American history. In 1965 Chandler published an article, "The Railroads: Pioneers in Modern Corporate Management," which argued that the railroads were the nation's first "big business" and had first developed methods of modern management that were critical to the smooth functioning of not only the railroads but of American capitalism. The mere operation of a trunk-line railroad (with its enormous investment in track and equipment; its system of tracks, trains, and employees; its need for safety, regularity, efficiency, and maintenance; and its enormous number of financial transactions) demanded that railroad managers develop systems of management and control to govern the complex system and those employees who were part of it.

At a time when large integrated textile companies (which were perhaps the most technologically advanced manufacturers in the United States) typically bore business expenses well under $500,000, the nation's new trunk lines spent 4 to 10 times as much. For example, in 1855, the Erie's operating budget approached $3 million, while the Pennsylvania spent well over $2 million. The scale differences in these respective operating budgets mirrored the differences in the capital invested in railroads and large-scale manufacturing companies in the late 1840s and the 1850s.

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126. Alfred D. Chandler Jr., "Review of American Railroads and the Transformation of the Ante-Bellum Economy," *Journal of Economic History* 29 (1969): 566.

127. Ibid., 305

The railroads, even in their earliest days, employed large numbers of workers — far more than even the largest manufacturing enterprises of the day. For example, in the 1850s, one of the largest textile mills in the United States employed about 800 workers; at mid-decade, the Erie, at that time larger than its archival the Pennsylvania, employed over 4,000 workers. Three decades later, the Pennsylvania would command a workforce of almost 50,000 employees.

According to Chandler, three men trained as civil engineers who would later become leaders of railroads hammered out the basic methods of modern management: Daniel McCallum of the Erie Railroad, Benjamin Latrobe of the Baltimore & Ohio, and J. Edgar Thomson of the Pennsylvania Railroad. These pioneering managers developed organization charts and job definitions that specified line and staff functions. Building on the work of McCallum and others, Thomson divided the sprawling Pennsylvania into several operating divisions and gave their superintendents line responsibility for the daily operations of their respective divisions. These division superintendents reported to the railroad's general superintendent, who in turn reported to the president of the railroad.

Thomson also established a staff departmental structure that paralleled the functional activities of the divisions, such as accounting, purchasing, machinery, maintenance of way, etc. The principals of the staff departments were responsible for the establishment and monitoring of standards in their respective departments. As Chandler wrote, "This line-and-staff concept, by which the managers on the line of authority were responsible for ordering men involved with the basic function of the enterprise, and other function managers (the staff executives) were responsible for setting standards, was first enunciated in American business by the Pennsylvania Railroad in December 1857."[128]

The system of management at the Pennsylvania was widely emulated by other railroads in the United States after 1860 and became critical to the management of diversified manufacturing firms in the 20th century. Thus, the railroads were not only the nation's first big businesses, but they were also vastly influential in shaping the conduct of the nation's business.

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128. Alfred D. Chandler Jr., *The Visible Hand: The Managerial Revolution in American Business*, (Cambridge: Harvard University Press, 1977), 106.

The end of the Civil War witnessed explosive growth in America's industrial infrastructure. The war had disrupted the economies of both the Union and the Confederacy, but its destructive effects had been limited, with few exceptions, to the southern states. The economic growth of the northern states may have stagnated, but certain sectors continued to grow, and in fact received additional stimulus from the demands of the war effort. The Pennsylvania Railroad, on the whole, found that the war could work to its advantage. While the B&O's operations suffered frequent and serious disruption, due to its proximity to the battle lines, the Pennsylvania flourished by comparison, as a vital carrier of troops and supplies for Union forces.

The war's end left the PRR intact and poised to expand its influence. Both the Pennsylvania and its rival, the B&O, had spent millions of dollars laying track and building locomotives before the end of the Civil War. They did this in an era when million-dollar corporations were almost unheard of. The Pennsylvania's balance sheet for 1865 showed that capital outlays for road improvements had topped $23.2 million. Increasing railroad competition in western Pennsylvania sparked frenzied building campaigns, particularly in the coal mining country in the late 1870s and 1880s.

Despite its position on the Ohio at Wheeling, the B&O was effectively shut out from western Pennsylvania. Pennsylvania denied the railroad charter rights in 1846 and forced the B&O into the alternate Wheeling route. Until its 1868 lease of the Pittsburgh & Connellsville connected the whole length of its track, the B&O stood anxiously at the doorstep of a lucrative coal region. The area had already been recognized as an abundant source of metallurgical coal. With demand for iron products at record levels in the wake of the Civil War, some railroad companies, including the B&O, were clamoring to get a piece of the coal trade. Investors in mining companies were also marshalling their resources to expand mines in the Fayette County area and provide access to transportation.

The B&0 also wished to gain access to the Pittsburgh manufacturing trade, and a more direct right of way to the Great Lakes area. Pittsburgh wanted a second outlet to the Atlantic seaboard in order competitive shipping rates. The PRR for its part fought to maintain its control of the Pittsburgh market and its power to fix rates. This reflected the patterns of

trading interests and competition that had prevailed in the region since the end of the 18th century.

The Pennsylvania drove the South West Pennsylvania Railroad and the Brownsville Railroad deep into the coal regions of Fayette County by 1875. Four years later the Pittsburgh & Lake Erie (a NYC-financed venture) entered the area, signifying an attempt by outside interests to increase the competition for the area's coal and bringing with it the clout of a trunk line competitor to the PRR and the B&O (see the Major Railroads in Western Pennsylvania ca. 1869-1930 map).

> I am sure that any competent judge would be surprised how little I ever risked. . . . When I did big things some large corporation [i.e., the Pennsylvania Railroad] was behind me and [was] the responsible party.[129]

Railroads helped shape the economic and industrial development of Western Pennsylvania through its enormous consumption of iron and steel for rails and railroad equipment. The manufacture of iron and steel for the railroad drew on regional resources, especially coal, in an unprecedented manner and led to significant growth and innovation during the last third of the 19th century, the height of railroad construction in the United States.

The substitution of steel for iron rails represents one of the most significant innovations in the history of railroading, and it had vast repercussions for western Pennsylvania. Iron rails limited the weight and number of trains travelling over a given track. By the early 1860s, the Pennsylvania Railroad was having to replace rails in some of its sections every six months. Worn rails had to be replaced either with new rails or with re-rolled rails. In 1857 more than 56,000 gross tons were rerolled; six years later, that number had risen to close to 150,000 gross tons.

Steel rails vastly outperformed iron rails. Early tests in England indicated that steel rails lasted some eleven times longer than iron rails. Also, steel rails could bear greater loads than could iron rails. But they cost a great deal more, especially when Bessemer steelmaking capacity was small in both England and the United States. But with increased Bessemer steel capacity,

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129. Andrew Carnegie, quoted in Harold Livesay, *Andrew Carnegie and the Rise of Big Business*, (Boston: Little, Brown and Co. 1975), 29-42.

MAJOR RAILROADS IN WESTERN PENNSYLVANIA

CA. 1860-1930

United States Department of the Interior • National Park Service
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PENNSYLVANIA

NEW JERSEY

MARYLAND

WEST VIRGINIA

OHIO

PITTSBURGH

TO ST. LOUIS, MO.

GREENSBURG

ALTOONA

JOHNSTOWN

PHILADELPHIA

DE.

ALLEGHENY RIVER

MONONGAHELA RIVER

YOUGHIOGHENY RIVER

WEST BRANCH SUSQUEHANNA R.

SUSQUEHANNA RIVER

DELAWARE RIVER

N

0 5 10 20 30 40

PENNSYLVANIA MAINLINE R.R.

BALTIMORE AND OHIO

BUFFALO, ROCHESTER AND PITTSBURGH

BUFFALO AND SUSQUEHANNA

NEW YORK CENTRAL

PITTSBURGH AND LAKE ERIE

MONONGAHELA

BESSEMER AND LAKE ERIE

WESTERN MARYLAND

MAJOR RAILROADS IN WESTERN PENNSYLVANIA

CA. 1860-1930

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the cost-price performance characteristics of steel rails rapidly improved compared to those for iron rails. According to Poor's *Manual of the Railroads of the United States*, in 1880, almost 30% of the 116,000 miles of rails in the U.S. were made of steel. By 1907, 97% off the nation's 325,000 miles of rails were steel.[130]

Led by its president, J. Edgar Thomson, the Pennsylvania Railroad pioneered in the substitution of steel for iron rails and led the entire industry in the United States in testing, adopting, and promoting the manufacture of steel rails. Alarmed by the rates of wear on the Pennsylvania's mainline tracks, Thomson journeyed to Britain in 1862 to study the manufacture and use of steel rails. Because the British reported excellent results with steel rails, Thomson bought several hundred tons of the new rails and ordered them installed in locations where the Pennsylvania was experiencing heavy wearing of iron rails. Seeking additional data on rail performance, the railroad also purchased and laid a small amount of iron rails whose wearing surfaces were steel. These initial trials of alternatives to iron rails were conducted in 1864. A year later, the Pennsylvania bought and laid 100 additional tons of crucible steel rails and also 270 tons of rails rolled from Bessemer steel.

By 1866, Thomson and his technical staff had concluded that steel rails overwhelmingly surpassed iron. Indeed, he argued that the new material wore at one-eighth the rate of iron but cost only twice the price of the inferior material. Steel-surfaced iron rails, the Pennsylvania's trials indicated, offered three times the wear of solid iron at only a 25% premium.

Although the steel-surfaced iron rails were a good alternative to solid iron, the performance of the all-steel rail was superior. As Thomson informed his company's stockholders, "The general introduction of steel rails is now wholly a commercial question, in which the cost of the increased capital required for their purchase becomes the chief impediment to their general adoption."[131] The Pennsylvania's plan was to replace iron with steel rails on its

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130. Swank, *Progressive Pennsylvania*, 210.

131. *Pennsylvania Railroad Annual Report, 1866*, quoted in Steven W. Usselman, "Running the Machine: The Management of Technological Innovation on American Railroads, 1860-1910" (Ph.D. diss., University of Delaware, 1985).

heavily trafficked mainline as fast as possible and to rely upon rerolled iron rails to replace worn out or broken iron rails on spur and branches.

Thomson and the Pennsylvania then moved aggressively to promote the domestic manufacture of steel rails. In 1864 Thomson had written that the Pennsylvania Railroad would build its own steel rail plant if that was what was required to get good and affordable steel rails. Roughly a year later, Thomson became one of the founders of the Pennsylvania Steel Company, a Bessemer steel rail mill planned to have an annual capacity of 10,000 tons located along the Pennsylvania Railroad lines hear Harrisburg. The Pennsylvania Railroad invested $600,000 in the plant — roughly one-third of its total cost.

For a brief period, steel ingots made at the new plant were shipped to the Cambria Iron Works in Johnstown to be rolled into rails, owing to delays in getting the rolling mill of the Harrisburg plant built. The experience with rolling the new and tougher material at Cambria yielded significant innovation in rolling mill design.

When it began operations in May 1868, the Pennsylvania Steel Company's rail mill was the largest in the United States and included four sets of three-high rolls, the first of which broke down ingots into 10-inch blooms, the second formed rough rail shapes, and the third of which finished the rail. The fourth set of rolls was used for alternative forming alternative rail patterns. By 1869, the Harrisburg plant was turning out more than 7,000 tons of steel rails.

Cambria's brief experience with rolling steel rails for the Pennsylvania Steel Company encouraged the owners of the Cambria Iron Works to enter the production of steel rails. The manufacture of steel rails constituted a major engine of growth and change in western Pennsylvania and stemmed directly from the actions and intentions of the Pennsylvania Railroad. Cambria's steel plant made its first blow on July 10, 1871, and incorporated process innovations made by both Alexander Holley and John and George Fritz. By 1876 the total output of the Cambria works reached almost 93,000 tons — slightly less than 43,000 tons of iron rails and 50,000 tons of steel rails — a record output for any iron and steel plant in the United States. Soon, however, the performance of the Cambria Bessemer steel rail plant would be upstaged by Andrew Carnegie's new steel mill at Braddock's Field, a few miles east of Pittsburgh.

The Pennsylvania Railroad played as great a role in Andrew Carnegie's rise to fame and fortune as Carnegie's own driving ambition and shrewd business acumen. A Scottish immigrant, Carnegie had been a laborer in a Pittsburgh textile mill and then a messenger for a telegraph company. In the latter job he worked his way up to become a full-time telegraph operator and developed other marketable skills though his nighttime studies of accounting. In 1852, he accepted a job offer from Tom Scott, superintendent of the Pennsylvania Railroad's western division, as secretary and personal telegrapher. Under Scott's tutelage Carnegie learned about the world of business and opportunities that lay within it through hands-on management of the Pennsylvania Railroad.

Three years later, Scott was promoted by company president J. Edgar Thomson to the position of general superintendent, and at Scott's request, Carnegie accompanied him to the Pennsylvania's offices in Altoona from which he would have a broad view of the railroad's operations and would play an important role in decisions about operations, rates, and investment. When Scott became vice president of the Pennsylvania in 1859, he named Carnegie superintendent of the line's western division, a position that under Thomson's organizational plan gave Carnegie enormous autonomy over all the operations in the division and he flourished in this position. In the period from 1859 to 1865, the Pennsylvania expanded dramatically. Traffic grew by 400 percent while the trackage more than doubled. Carnegie managed his responsibilities aggressively yet prudently, and in 1865 Thomson offered him the position as general superintendent of the entire line. But Carnegie demurred. He had decided to become a capitalist.

Carnegie had witnessed Scott's and Thomson's investments in manufacturing and other enterprises — most of them connected to the railroad and its services — and, at Scott's urging, he had actually become an investor in several of the ventures in which Scott had taken a large role. By 1863 his investments were generating income that approached $50,000 per year and were growing.

Between 1865 and 1872, Carnegie rode the crest of the wave of expansion that gripped the United States after the Civil War. During these years, "He became a masterful speculator, manipulating stock in Western Union and Union Pacific, jousting with entrepreneurs Jay Gould and George Pullman. Carnegie began promoting stocks and bonds, selling $30 million

in Europe in five years. Then he abruptly abandoned his career as speculator and financier."[132] Instead, he became the dominant manufacturer of steel in the United States. The railroad — especially steel rails for the railroad — served as the vehicle for his meteoric rise as an industrialist.

During the 1860s, Carnegie had dabbled in the manufacture of iron. He and several associates entered several areas of iron manufacture, including pig iron production, iron refining and fabrication, bridge member design and construction, and even iron rail manufacture. In 1872 he toured several large Bessemer steelworks in Sheffield and Birmingham, England. These tours and his conversations with plant managers gave Carnegie an important insight: the success of the Bessemer process was dependent not only on having the right ore, but also on having a large-scale plant adjacent to transportation lines for raw materials and finished products. Pittsburgh offered significant advantages over most of the other Bessemer rail plants in transportation costs for the newly developed iron ore fields of the Lake Superior district. The J. Edgar Thomson Works at Braddock's Field would be the physical manifestation of that insight.

The plant's property abutted both the mainline of the Pennsylvania Railroad and the Baltimore & Ohio Railroad's line into Pittsburgh. This position provided Carnegie with enormous leverage over the two competitive railroads. Carnegie used this position to force the president of the B&O to make steel purchases from the J. Edgar Thomson Works if he hoped to do any business with the company. The plant's location on the Monongahela River provided excellent access to coal and coke from the Connellsville region and downstream transportation of finished products. Pittsburgh's transportation systems also provided an efficient linkage with the ore fields of the Lake Superior district.

At the J. Edgar Thomson Works, two 5-ton Bessemer vessels would convert the iron to steel. In addition, the plant would have two 5-ton Siemens open hearth furnaces. The steel ingots cast from the molten steel from these furnaces would be rolled into rails. Design and construction of the 30,000 ton-per-year plant took three years. Plant startup occurred on August 22, 1875, some two weeks after Carnegie had secured its first order for 2,000 tons of

132. Livesay, *Andrew Carnegie and the Rise of Big Business*, 61.

steel rails, notably from the Pennsylvania Railroad. From that point forward, the plant and its workers began their endless campaign of "hard driving" — running the plant steadily at full capacity. Rail costs were below other Bessemer plants and provided Carnegie with the leverage to build an empire of steel production.

In 1906, total production of Bessemer steel rails in the United States was 3,791,459 tons. The J. Edgar Thomson Works alone produced nearly 827,000 tons of that output, almost 22 percent. A total of 1,105,941 tons of steel rails were produced that year in western Pennsylvania, most of the balance of which was manufactured at the Cambria Steel Company in Johnstown. The remarkable cost reductions achieved at the J. Edgar Thomson Works and Carnegie's hard-driving, aggressive policies allowed him to dominate steel rail production in the United States and to expand his business rapidly.

The intense postbellum competition between the major railroads in western Pennsylvania that accelerated the rapid development of the steel industry began in a period of remarkable industrial expansion. The nation's recovery witnessed tremendous increases in productivity. Railroads like the Pennsylvania aggressively expanded their sphere of operations, creating national markets and generating increased production in related industries. The nation's cities, particularly those in the more industrialized Northeast and upper Midwest, grew at phenomenal rates. The oil industry continued the boom of the antebellum years. Glassmaking, papermaking, meatpacking, and milling all experienced tremendous growth in the late 1860s and early 1870s.

However, this dynamic economic process was vulnerable to market downturns, investment capital shortages, overproduction, and political scandal. In 1873, contraction of the money supply, overextension of rail mileage, a financial panic in Vienna, the political scandals of the Grant administration, and the collapse of an American investment-banking firm, Jay Cooke and Company, triggered the Panic of 1873. This six-year depression lasted longer and was more intense than any that America had yet suffered.[133] Railroad construction slowed, unemployment approached the 3 million mark, and hundreds of businesses failed. The panic

133. Tindall, *America. A Narrative History*, 730.

created enormous hardship for millions and bred conditions that fostered social unrest, especially in the cities.

The overextended railroads found themselves competing for revenues in shrinking markets. The Pennsylvania and others engaged in rate wars, cutting fares on passenger and freight traffic.[134] Thomas A. Scott, the president of the Pennsylvania Railroad, claimed that, "During the first six months of 1877, not a farthing was made on through competitive freight by any line."[135] If so, this signalled a recent reversal in Pennsylvania's fortunes. The year before, the railroad had reported net profits of $22 million.[136] In response to the depression, eastern railroads, including the PRR and the B&O, agreed on new rates to take effect on July 1, 1877. In addition, they also ordered a 10% reduction in wages.

Railworkers had already taken a wage cut in 1873. They argued that further cuts would not allow them to support themselves or their families. "It's a question of bread or blood."[137] In retaliation, brakemen and firemen of the Baltimore & Ohio walked off the job and effectively blockaded the railroad's freight lines.[138] West Virginia militiamen sent to quell the disturbances openly fraternized with strikers. One officer explained that "Many of us have reason to know what long hours and low pay mean and any movement that aims at one or the other will have our sympathy and support. We may be militiamen, but we are workmen first."[139]

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134. In a corporate history of the Pennsylvania, Edwin P. Alexander wrote of the 1873 Panic that "the railroads, largest business generally in the country, suffered most." This perspective in all likelihood reflects the attitude of the railroad at the time. The suffering of railworkers drawing below subsistence-level wages was for some railroad executives incidental, at best. Edwin P. Alexander, *The Pennsylvania Railroad. A Pictorial History* (New York: W.W. Norton and Company, Inc. 1947), 223.

135. Ibid., 223.

136. Philip S. Klein and Ari Hoogenboom, *A History of Pennsylvania* (University Park and London: The Pennsylvania State University Press, 1980), 296.

137. Ibid., 326.

138. Strikers participating in the Great Strike of 1877 generally allowed passenger and freight trains to operate. They targeted freight trains, the railroads' most significant revenue source.

139. Nell Irvin Painter, *Standing at Armageddon. The United States, 1877-1919,* (New York: W.W. Norton and Company. 1987), 15.

West Virginia's governor then requested, and received, federal troops from President Rutherford B. Hayes. This marked the first time since Andrew Jackson's presidency that federal forces had been used to break a strike. These troops succeeded in freeing some trains in Martinsburg, West Virginia, but by then violence had erupted in Baltimore. Workers, many of whom were actually nonstrikers, flooded the city's streets, set fires, and fought open battles with Maryland troops. Before calm descended, 10 people had died, and 23 were injured when militia troops fired into a mob. By the end of the chaos in Baltimore, 500 federal troops, including Marines, were stationed in the city.

The strike's most spectacular conflict occurred in Pittsburgh, where workers launched an assault on the Pennsylvania Railroad. Pittsburgh "was a workingmen's town in which all classes were united in hatred of the Pennsylvania Railroad."[140] The railroad's monopoly over freight carriage and artificially high rates, its staunch resistance to the B&O receiving a right-of-way into the city, and its enormous influence in the state legislature made it a symbol of the oppressive power of industrial capitalism. When the PRR ordered double-engine trains for eastbound freights, it put dozens of brakemen and conductors out of work, adding further injury to the pay cut. Trainsmen Union called a meeting and agreed to a strike for Friday, July 20, 1877 (see figures 8-11).

Freight service was stopped on Friday. Local militia called out to disperse the strikers enjoyed the same success that the West Virginia militia had in Martinsburg. They discovered an almost instant fellowship with the strikers and did nothing. The vice president of the PRR, Alexander Cassatt, requested militia troops from Philadelphia. These troops arrived on Saturday, Gatling guns in tow. When confronted with a hostile mob that threw stones and fired upon them, the Philadelphia militia opened fire on the crowds, killing 20 and wounding many more.

The outnumbered militia retreated to a Pennsylvania Railroad roundhouse, where enraged workers and hangers-on surrounded them. Strikers set coal and oil cars ablaze and sent them crashing into the roundhouse. The strikers finally flushed the troops from the roundhouse and

140. Klein and Hoogenboom. *A History of Pennsylvania*, 326.

FIGURE 8: THE AFTERMATH OF THE GREAT STRIKE OF 1877, PITTSBURGH. The level of destruction raised fears of a workers' revolution. Looking east from 25th Street. *Courtesy of the Pennsylvania State Archives, Harrisburg, PA.*

FIGURE 9: AFTER THE GREAT STRIKE OF 1877. Looking west from 29th Street, Pittsburgh. *Courtesy of the Pennsylvania State Archives, Harrisburg, PA.*

Figure 10: Remains of the Lower Engine House, 26th Street, Pittsburgh. *Courtesy of the Pennsylvania State Archives, Harrisburg, PA.*

Figure 11: Spectators Taking in the Sights in the Wake of the Strike. Pittsburgh. *Courtesy of the Railroaders Memorial Museum, Altoona, PA.*

drove them in headlong retreat, first to the arsenal, and then out of the city altogether, to the Allegheny County Workhouse, 12 miles away.

With the rout of the militia troops, many of the strikers, sympathizers, and violent opportunists exploded in a full-scale riot, focusing their destructive energies on the property of the Pennsylvania Railroad.[141] Before the arrival of federal forces on Monday, July 23, 104 locomotives, 2,152 railcars, the roundhouse, the depot, and other PRR property had been obliterated. United States troops marched into a fire-blackened, battle-scarred city.

Sympathetic strikes spread throughout the country, from Cumberland, Maryland, to Chicago and San Francisco. Strikes paralyzed freight traffic on rail lines throughout the Northeast and Midwest. Twenty thousand rallied at a Workingmen's party demonstration in Chicago to hear speeches by the anarchist Albert Parsons. Street fighting in Chicago between police and workers killed 40 to 50 people. In St. Louis, workers took over the city in a week-long general strike. ". . . the city's workers took pride, briefly, in having set up the nation's only 'genuine Commune.'"[142] Federal troops rushed from city to city to quell disturbances that ultimately left 100 dead and $10 million in railroad property in ruins.

For millions of Americans, the Great Strike revealed labor's dangerous potential as a disruptive, potentially revolutionary force. The strikers' violent and destructive attacks on railroad property struck a blow at what many considered the very heart of the American way of life: the sanctity of private property. The notion of organized labor itself seemed to pose a threat to inalienable rights of property. Industrialists and many in the middle class considered workers' demands on wages, hours, and working conditions to be blatant interference with a man's right to dispose of his property as he saw fit. The incredible upheaval of the strike and riots raised the specter of the class violence that had racked Europe for decades. The revolutions of 1830, 1848, and 1870 prologued the bloody massacres that occurred during the suppression of the Paris Commune in 1871. The prospect of a communist revolution sent shock waves through a nation still recovering from the massive bloodletting

141. The events of the Pittsburgh chapter of the 1877 strike bear more than a passing similarity to the Los Angeles riots of 1992, in this selective destruction of property.

142. Painter, *Standing at Armageddon*, 18.

of the Civil War. Americans acted with alacrity to update state militias as a modern National Guard and to construct massive armories in cities throughout the United States.

For workers, the strike of 1877 also taught some profound lessons. They realized the enormous power of the forces arrayed against them, and learned at great cost that they could not stand against the combined strength of capital and the state. They discovered that they had no enforceable claim on any significant share in the productive process of which they were an essential part. The same federal government that recently had ordered troops to uphold the civil rights of blacks in the South now sent soldiers against its citizens in defense of property and capital. Labor now knew that it could not look to the federal government for help in their continued struggle with industrial capital. On the contrary, workers swallowed the bitter realization that it was openly hostile to their cause. The Great Strike, in which western Pennsylvania figured so prominently, helped set the tone for industry-labor relations for the next half-century.

> To call Altoona the cranium of the Pennsylvania Railroad would be an incorrect simile. . . . Perhaps Altoona might more properly be regarded as the stomach of the Pennsylvania Railroad. . . . Some one has said 'that brains are all very well in their place, but a good reliable set of bowels is as of much importance as brains . . . the vigor and force which are the motive power in great human affairs depend on the digestive organs. Altoona fulfills an analogous function.[143]

Railroad development had an enormous impact on the economic and labor history of western Pennsylvania, but it also significantly shaped the region's social and communal evolution. The city of Altoona was founded as a railroad community, and its growth, development, and decline were inextricable linked to the fortunes and failings of the Pennsylvania Railroad. Altoona offers the region's most dramatic example of transportation technology's ability to affect, even create, a community's history, identity, and heritage.

Altoona owes its existence to the PRR's efforts to surmount the Allegheny Ridge with a reliable, all-weather rail route to bypass the Allegheny Portage. The construction of the

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143. This curious anatomical reference first appeared in an 1880 magazine article and was reprinted in the Pennsylvania Railroad's "Engineer of Tests Report to the Interstate Commerce Commission" (1914). The author perhaps was attempting to demonstrate that a railroad, like an army, travels on its stomach, although the comparison to the human digestive tract was not particularly flattering to the city of Altoona. At any rate, the railroad liked the analogy well enough to reprint it.

Horseshoe Curve and the Gallitzin Tunnel solved the problem of the ridge. The railroad now required an operational center at the base of the Alleghenies to service the additional motive power required to pull trains up the grades leading to the Curve. Hollidaysburg, the terminus of the portage, was too far from Horseshoe Curve. The railroad chose a new location, purchasing land in 1849 near the base of the Allegheny Front. In 1850, the railroad built a half-round car erecting shop, locomotive erecting shop with a foundry, machine shop, woodworking shop, and paint shop.[144]

The Horseshoe Curve and the construction of the Gallitzin Tunnel in 1854 ensured the viability of the Pennsylvania Railroad as a major carrier of freight and passengers between the East Coast and the Ohio Valley. As the PRR prospered, so did the new town of Altoona. By 1854, its population had increased to 2,000 and it was incorporated as a borough. By 1868, Altoona, riding the crest of the railroad's wartime boom, had grown significantly. Its population had increased to 10,000 in less than 15 years. The railroad in 1869 added the Altoona car shops and the Altoona machine shops to its existing facilities. This new construction cemented Altoona's vital position in the Pennsylvania Railroad's network. By 1870, the Altoona shops employed hundreds of workers in a number of tasks including locomotive and railcar construction and repair, metals production, and blacksmithing (see figures 12 and 13 at the end of this chapter).

The Altoona works illustrate the larger production strategy that the PRR management adopted in the early 1870s. Railroad officials established as a goal the "standardization of all cars, engines, and other machinery used on the railway."[145] The company could realize this objective by manufacturing its own equipment. The Pennsylvania manufactured the majority of its own locomotives, rolling stock, and supplies. The material that it did not produce was manufactured according to the PRR's rigid standards. The railroad built and maintained its own stations and rail lines. It did not own coal mines outright, but its major share holdings of coal mines assured it some power to determine fuel prices. Through its price fixing

144. Robert L. Emerson, *Allegheny Passage. An Illustrated History of Blair County* (Woodland Hills, CA: Windsor Publications, 1984), 34.

145. National Park Service, U.S. Department of the Interior, *A Special History Study, Pennsylvania Railroad Shops and Works, Altoona, PA*, by John C. Paige, (Denver Service Center, 1989), 15.

agreement with the Cambria Iron Company and the Carnegie Steel Company, the railroad could exert significant control over rail costs.

> The Pennsylvania Railroad was practically the fixer of the price of rails for a long period. The Penn. RR divided its tonnage between the 3 mills on its main line of road . . . the Penn. (Steel) works, the Cambria Works at Johnstown, and the J. Edgar Thomson works. For a long period rails were not purchased by other roads until the Penn. RR led off its order and after it placed its order the other roads would come in.[146]

The vast facilities of the Altoona works provided the final vital production component that allowed the Pennsylvania to achieve, to a remarkable degree, the vertical integration of mechanisms and functions of a railroad operation.

Throughout much of its existence, the Pennsylvania Railroad's locomotive building facility and shops in Altoona were the cutting edge of locomotive design in the United States. This was particularly true in the last three decades of the 19th century,and the first decade of the twentieth century. In 1874 the PRR laid plans for a new locomotive production facility near the site of its existing Altoona Machine Shops. In developing the new site, PRR engineers decided to flip the orientation of the locomotive assembly line on its axis and stretch it out for almost 1/4 mile. The result was a three-track system of rails laid from one end of the facility to the other, wherein a new locomotive emerged from the foundry to be formed and fitted in the boiler shop and blacksmith shop, then passing through the machine shop and into the erecting shop where workers attached the wheel assemblies, drivers firebox, and boilers. The longitudinal design was a revolutionary transformation from the standard transverse erecting bays that the PRR had previously employed. The Altoona shops also became legendary for their testing of locomotives, particularly for the installation of a dynamometer in 1904. This allowed locomotives to run in place while engineers measured their tractive power, and fuel and water consumption. Other locomotive manufacturers used this facility to stress test their products (see figures 14 and 15 at the end of this chapter).

The locomotive test facility was only the most spectacular example of the Pennsylvania Railroad's unstinted commitment to product and operational standardization. The PRR

146. Elting E. Morison, *Men, Machines, and Modern Times* (Cambridge: The M.I.T. Press, 1966), quoted in National Park Service, *Historic Resource Study. Cambria Iron Company* by Sharon Brown (Denver Service Center, 1989), 79.

declared itself the "Standard Railroad of the World," and it backed up this claim with painstaking efforts to eliminate as many variables in railroad construction and operations as possible. The Department of Physical Tests, established in Altoona in 1874, preceded the locomotive test facility. The railroad added a chemical laboratory to the test department the following year and hired Dr. Charles Benjamin Dudley to head the first internal industrial chemical laboratory in the railroad industry.

Dudley began with work on the animal fat-based lubricants used on the railroad, discovering that their decomposition produced acids that corroded cylinders. Four years later, Dudley's research on steel rails proved that a reduction of carbon content yielded a softer rail of superior durability. The department expanded its scope to test virtually every product that the railroad manufactured or used. It tested the metal used in casting car wheels and axles and in steel car springs. It checked the relatives values of different coal grades, it examined paints, varnishes, and lubricants. The test department helped develop a less abrasive soap for washing passenger cars. In 1889, the department added a Division of Bacteriological Chemistry, which monitored the railroad's drinking water supply. It also conducted medical tests for company doctors and it devised methods for reducing the mineral content of boiler water.

The test facility at Altoona ultimately developed a comprehensive system of standard specifications for all classes of materials and supplies. Other railroads that did not have their own test facilities adopted the standards of the Pennsylvania Railroad. "The use of such specifications for quality control became a standard practice throughout industry, and Dudley is generally given credit for its introduction."[147] Both the physical and chemical laboratories worked closely with the railroad's purchasing department to establish quality control. "However, they soon became involved in what is generally termed 'applied' research, leading to improved designs."[148]

147. Christopher T. Baer, "A Guide to the History and Records of the Pennsylvania Railroad Company" (The Hagley Museum and Library, unpublished finding aid), 1.

148. Ibid.

In a curious way, the railroad's relentless pursuit of excellence in standards washed over onto the city of Altoona itself. Although not a model company town in the strict sense, as was Windber, the Berwind-White Coal Company's town in Cambria County, the city clearly bore the stamp of the Pennsylvania Railroad." . . . (Pennsylvania Railroad) officials were very much aware that the town must have a cultural and social life in order to transcend the simple camp atmosphere of the 1850's."[149] The PRR "sponsored bands, choral societies, sporting events, volunteer fire companies, a library, and a hospital."[150] It built a cricket field, golf course, tennis courts, and sports fields. It organized baseball, basketball and football teams from among its workers. The PRR in a very real sense dictated the rhythms of life itself.

> Since time was very important . . . the 'Company' did something to furnish good standard time to all its dependents. This was done by means of whistles or horns. A six O'Clock whistle wakened the workers of the community. Ten till seven gave them walking time to reach their jobs. Seven O'Clock was work time. Whistles blew at 12 noon, ten till one and One O'Clock, there was a five O'Clock whistle, and on some schedules, one at six. With this kind of help in keeping time, not alone [sic] the employees, but the school children, wives, store keepers, in fact the whole community were time conscious. The typical railroad community had a real feeling of guilt in starting a meeting late.[151]

As railroads dominated American transportation in the late 1800s and early 1900s, Altoona enjoyed a consistently sound economic base, thanks to the sustained prosperity of the Pennsylvania Railroad. Other businesses existed in the city, but none represented even a fraction of the power of the railroad. It was a one-horse town, despite a population that had reached 60,000 by 1913, and generally content to remain so, rising or falling according to the fortunes of the Pennsylvania Railroad. Many citizens recognized the dangers of this economic uniformity, and hoped to diversify the city's economic base. But the railroad was antagonistic to any development that smacked of competition. It resisted new industries' attempts to locate through its control of industrial water rights. The railroad even turned down the city itself when it tried to purchase a reservoir in 1930.

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149. Emerson, *Allegheny Passage*, 48.

150. Ibid.

151. Paul Kurtz, *Blair Main Line*, quoted in Emerson, *Allegheny Passage*, 56.

The Pennsylvania Railroad's total dominance of the city cast a chilling shadow on its statement that "The city of Altoona is a creation of the Pennsylvania Railroad."[152] (See figures 16 and 17 at the end of this chapter.) So long as the Pennsylvania Railroad remained the dominant force in western Pennsylvania transportation, Altoona would continue to prosper. But railroads would face increasingly perplexing challenges to their supremacy from an alternative form of transportation, the automobile, as well as technological change within the industry itself.

Western Pennsylvania manufacturers contributed a significant number of technological innovations to railroading in the 19th and 20th centuries. These included the Westinghouse air brake and switching and signalling equipment, the Janney semiautomatic coupler, the compressed air locomotive, the intercepting and reducing valve for compound cylinders on steam locomotives, the all-steel hopper car, and the aluminum bodied hopper car. But the one technological breakthrough that changed the face of the railroad industry in western Pennsylvania and the nation did not come from this region but from Europe.

The development of the diesel-electric locomotive and its rapid adoption after World War II wrought profound changes in western Pennsylvania. Dieselization affected the region in several ways. First, it meant that railroads would no longer be consumers of coal, the energy source that had fueled their steam locomotives since at least the 1850s. As railroads consumed roughly 20% of the nation's coal production, the substitution of diesel-electric for steam locomotives profoundly affected the coal-producing regions of western Pennsylvania. The drop in demand for coal would reduce traffic on the railroads of the region, several of which owed their very existence to coal haulage.

In addition, the "steam era" in railroading meant more than just steam locomotives. Railroads had to develop a vast infrastructure of shops and servicing facilities just to keep locomotives running on their lines. These facilities were located along the rail lines at fixed intervals, and they employed large numbers of highly skilled workers. Indeed, some towns along the railroad existed solely because they served the railroad's steam locomotives. Because of their

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152. The Pennsylvania Railroad Company. *The Pennsylvania Railroad. A Strategic History.* Altoona, PA (May 15, 1905), 3. General statistics for use of the delegates to the International Railway Congress with special reference to the Altoona shops and yards.

very low maintenance requirements, diesel-electric locomotives spelled the doom of most railroad service and repair facilities in the region. Finally, the particular manner in which diesel-electric locomotives were introduced in the United States meant an end to locomotive construction by the Pennsylvania, which had manufactured roughly 70% of its own steam locomotives throughout most of its history. Thus many businesses and communities and the culture that surrounded the region's steam locomotive construction and repair facilities were victims of what sociologist Fred Cottrell called "death by dieselization."[153]

Immediately before dieselization occurred, the American locomotive industry was an oligopoly. The American Locomotive Company (Alco), a firm formed in 1901 through the merger and eventual consolidation of several smaller locomotive manufacturers, held about 40% of the market. By 1928, Alco had fully consolidated its production facilities in Schenectady, New York. Baldwin Locomotive Works of Philadelphia, the nation's oldest and most successful locomotive manufacturer, also held about 40% of the market. Finally, the Lima Locomotive Works of Lima, Ohio, filled in the remaining 20% of the market. But, as noted, several railroads in the United States made their own locomotives, including the Pennsylvania, which built steam locomotives at its extensive shops in Altoona, Blair County.

The diesel engine was conceptualized by the German engineer Rudolf Diesel, who built his first engine in 1897. It appeared to offer clear thermodynamic advantages to other internal combustion engines and especially to the steam engine (an external combustion engine). In 1923, Alco, in conjunction with Ingersoll-Rand Company and General Electric, built an experimental three hundred horsepower diesel-electric and tested it on the New York Central Railroad, and by 1925, Alco had begun to market a commercial diesel-powered switching locomotive. These locomotives offered superior economics to steam-powered switchers, plus they avoided the extensive smoke of steam locomotives, which had begun to be regulated or even restricted in many urban areas. By the mid-1930s, Alco had sold some 190 diesel switchers, and demand increased in spite of the Depression. By this time, however, Alco had competitors, including an entirely new entrant, the General Motors Corporation.

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153. W. F. Cottrell, "Death by Dieselization: A Case Study in the Reaction to Technological Change," *American Sociological Review* 16 (June 1951): 358-65.

In 1930 General Motors purchased the assets of Electro-Motive Company, a manufacturer of gas-electric rail cars, and Winton Engine Company, a manufacturer of gas and diesel engines. Under the leadership of Charles Kettering, GM's research director, the company designed and built in 1934 the first diesel-electric passenger locomotives in the United States — the famous *Burlington Zephyr* for the B&Q and the *City of Portland* for the Union Pacific.[154] These two locomotives broke a number of time, distance, speed, and performance records and provided a clear signal that diesel-electric locomotives would supplant steam, at least on passenger lines. General Motors then introduced an improved diesel-electric locomotive designed for easy maintenance with standardized parts and offering superior performance. G.M.'s "Nr. 103" had logged some 83,000 miles under often-adverse conditions, and it showed superior economics — fuel costs for thousand-freight-ton miles half those of steam, grade-climbing without the customary need of "helpers", time and distance averages never attained with steam, and very low maintenance inputs.

These widely publicized test results pushed Baldwin to begin serious work on diesel locomotive development and Alco to devote more resources to road locomotive dieselization. Lima lagged considerably behind the other two steam locomotive makers. By this time, however, the die had been cast. Although the war would delay railroad adoption of freight diesel-electric locomotives, General Motors had already positioned itself to dominate the rapid and highly profitable dieselization of the American railroad.[155] Alco gained a small piece of the market but lost even that share over time. Baldwin and Lima tried to combine their "strengths" by forming Baldwin, Lima, Hamilton Corporation in 1950 but were soon out of the locomotive business. General Motors raised its market share to as high as 89%, resulting in the company being investigated for antitrust violations.

The Pennsylvania Railroad had long prided itself on its prowess in locomotive development. Indeed, it had been one of the major reasons that railroads in the United States had taken control over design of locomotives away from locomotive manufacturers as early as the 1860s. The Pennsylvania's motto, "The Standard Railroad of the World" pertained as much to its

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154. For Kettering's role in getting GM into the diesel locomotive business, see Stuart W. Leslie, *Boss Kettering. Wizard of General Motors* (New York: Columbia University Press, 1983), 267-73.

155. Both contemporaries and historians have argued that decisions of the War Production Board actually favored General Motors and hamstrung Alco.

locomotive design and construction as to any aspect of the railroad's operations. Its Motive Power Department, headquartered in Altoona, had earned a reputation throughout the United States as a leader in locomotive design, manufacture, and testing, but this department, as well as virtually everyone else in the railroad, had become so enamored with steam power that its leaders did not recognize the potential of the diesel.

In 1936, the Pennsylvania launched a special project to develop a high-speed duplex steam passenger locomotive — one that presumably would out-perform the new Burlington Zephyr. These efforts resulted in a locomotive (the Class S-1, Number 6100), built in the railroad's Juniata Shops in Altoona, which could travel at over 100 miles per hour. But the locomotive suffered severe maintenance problems and was scrapped in 1948. Nevertheless, the basic design of the S-1 inspired the Pennsylvania's efforts to design a high-speed, high-performance duplex freight locomotive, a project begun in 1939. The Q-2 resulted from this project, and between August 1944 and June 1945, the Pennsylvania manufactured 25 Q-2s in Altoona. But the performance of this steam-powered locomotive did not approach the General Motors diesel-electric road locomotive.

Managers and engineers in the Motive Power Department still did not give up on steam. They initiated development of a steam turbine locomotive. Designed in Altoona, this locomotive (the S-2) was built cooperatively by Baldwin Locomotive and Westinghouse Electric. When tested at the Pennsylvania Railroad's famous test plant in Altoona, the S-2 disappointed its designers. It delivered power with only 7.7% thermal efficiency — a small gain over the 6 to 8% that was common among conventional steam locomotives and well below the 15 to 30% ratings that diesel-electric locomotives were reported to possess. Moreover, its speed was limited, and road tests revealed a poor maintenance record.

At no point during the late 1930s or during the early 1940s did the Pennsylvania's Motive Power Department or any other unit of the railroad advocate attempt to build a diesel-powered locomotive. The tools, the skills, the organizational capabilities, and the mindset in Altoona were fixed rigidly on steam locomotives. After all, the Pennsylvania owned and operated almost 5,000 such locomotives. Indeed, just before the war began, the railroad had ordered one passenger diesel from General Motors for operation on a subsidiary"s line between Chicago and Nashville but had canceled that order after Pearl Harbor. Not until

March 1944 — and the failures of the various high-speed, high performance steam locomotive development projects — did the Pennsylvania reactivate that order.

During the remainder of 1944 and throughout 1946, the executives and engineers of the railroad carried out a debate about steam versus diesel, but at no point in the discussion was the possibility of the Pennsylvania building its own diesels entertained. Within a year after the war, as railroads in the United States logged more hours with diesel-electric locomotives and as they observed the phenomenal availability, performance, and service records of the new locomotives, it had become clear to all but the most obstinate partisans of steam power that diesels would drive steam off the American railroad. This vast sea change would render the Pennsylvania's steam locomotive construction organization and shops obsolete.

The Pennsylvania Railroad's slow response to the diesel-electric locomotive reflected in part its commitment to the coal complex that had developed in western Pennsylvania. In 1945 almost 35% of the Pennsylvania's freight (on a tonnage basis) was coal.[156] The B&O was highly dependent on coal; almost 53% of its freight was coal, much of it mined in western Pennsylvania and carried (either as coal or as coke) to the region's iron and steel mills. Railroad executives were highly concerned about alienating coal companies and mine operators when they considered switching from steam to diesel. Even though these coal carriers received coal at highly favorable rates, steam locomotives could not match the total performance of the diesel. They recognized that a switch to diesels would raise their operating efficiency but reduce their haulage of coal.

The dieselization of American railroads occurred at the same time that another large-scale transformation was occurring in the United States: the shift from coal to oil and natural gas for electricity generation, commercial and home heating and as a feed stock for the manufacture of chemicals. One factor that seems to have pushed even the coal-hauling railroads toward dieselization was the series of coal strikes by the United Mine Workers in 1946, which resulted in the price of coal doubling and the development of coal shortages in some parts of the country. This strike prompted President Harry Truman to put federal troops in charge of the mines on May 26, 1946.

156. The 1945 Pennsylvania Railroad Annual Report claimed an even higher amount, 41%.

If the Pennsylvania and other major coal carriers had been slow to commit to dieselization after the war, by 1947 they joined the massive dieselization program being carried out in the U.S. Worried about remaining competitive with other major East-West lines, the Pennsylvania's managers made a decision in December 1946 to convert to dieselization as soon as possible. By 1957, the Pennsylvania had no more steam engines in service.

Without question, dieselization had significant impacts on the region's railroad industry. The change led to closings of shops and other service facilities associated with steam-powered railroads and extremely sharp reduction of workers at those facilities that remained open. In 1940, the Pennsylvania Railroad alone employed 18,272 workers at its shops at 18 locations in the region. Dieselization, combined with general decline of railroad shipments in the region led the Pennsylvania Railroad to close most of its shops in the region. Indeed, by the 1980s, only two repair shops of what formerly was the Pennsylvania Railroad remained in the region, the Juniata shops in Altoona and the Conway shops in Beaver County.[157] After the Juniata shops built the Pennsylvania's last steam locomotives in 1946, the railroad began to cut employment there and in the Altoona steam locomotive repair shops. By 1949 employment at Altoona stood at 11,939, a figure slightly higher than the depressed level of 1940, but well below the employment reached during World War II when the railroad was running nearly at 100% of capacity.

During the early stages of its program of dieselization the Pennsylvania built two entirely new facilities for repair and servicing of passenger and freight diesels in Harrisburg. To construct these facilities cost the railroad over $5.2 million in 1947, and in 1949, the railroad was projecting total construction expenditures for diesel shops of $16.1 million. But it was also projecting a "substantial savings" in repair facility costs owing to phasing out steam locomotives, and, of course, the bulk of these savings came by closing steam engine repair and manufacturing facilities and reducing the employment of skilled workers.

The Altoona locomotive repair shops suffered greatly under the dieselization program even though the railroad's managers converted the Juniata facility into a diesel repair shop. Because diesels need far less frequent maintenance, the employment at Juniata paled in

157. According to Diane Hays of Conrail Information, the Juniata/Altoona shops now employ about 1,500 workers.

comparison with the steam engine era. The reduction in force devastated the Altoona community. By 1958, unemployment ran as high as 15%. In 1961, the PRR's Altoona shops employed 6,500 people, many of whom were part-time employees subject to long layoffs. The city's population declined steadily, and its median age increased significantly as Altoona's young moved away to find opportunities elsewhere.

Between 1945 and 1959, the Pennsylvania reduced its total system-wide employment from 161,436 to 79,516, or 51 percent. These figures contrast markedly with national statistics of a roughly comparable period (1947 to 1958) during which railroad employment dropped from 1,350,000 to 846,000, or 38 percent.

At this juncture — almost 150 years after a steam locomotive first pulled freight and passengers on the Portage Railroad — the verdict about the technological future of American railroads is unclear. On the one hand, there are some promising developments. *Time* magazine recently announced that American railroads were "back at full throttle" and concluded, "Leaner, cleaner, tougher, and better managed, America's freight-train system is becoming competitive again."[158] Part of this turnaround was attributed to many of the technological changes that railroad leaders of the 1950s had envisaged, such as double-decker piggybacking, trains without cabooses and featherbedding workers, and automated freight handling and yard classification. Yet at the same time, Amtrak, the federal agency that manages railway passenger service in the United States, has undertaken testing of high-speed locomotives for several heavily traveled routes, but none of the locomotives being tested are U.S.-made. The Germans, the French, and the Japanese are competing for Amtrak orders.

Today, the participation of firms and carriers in western Pennsylvania in bringing about technological change on the railroad is minuscule compared to what it was in the heyday of the steam railroad. Yet, regional and state planning agencies are actively promoting firms, universities, and research consortia in trying to reinvigorate the region's once-great leadership. One hundred forty years after the commonwealth of Pennsylvania conducted its fire sale of the Pennsylvania Main Line Canal, the state is making investments in rail transportation technologies and in the railroad network of the region, just as it did at the very

158. *Time*, August 23, 1993, 52-55.

beginning of the railroad era. Whether these investments will yield a more competitive and economically prosperous region, or the region will see a flowering of firms comparable to a Cambria Steel Company, a J. Edgar Thomson Works or a Westinghouse Air Brake Company remains to be seen. One thing is clear, however. The resources that played so heavily in the making the region so technologically dynamic — coal, coke, iron, steel, and timber — are not likely to be so significant. But other factors — manufacturing skill, scientifically based knowledge, and flexibility — will probably be as critical to the future as they were to the past.

FIGURE 12: PENNSYLVANIA RAILROAD FREIGHT TRAIN ROUNDING THE HORSESHOE CURVE. The gentle grade of the Horseshoe Curve reduced the Allegheny Front as an obstacle to large-scale transportation development in western Pennsylvania. *Courtesy of the Railroaders Memorial Museum, Altoona, PA.*

FIGURE 13: ONE OF THE ROUNDHOUSES AT THE ALTOONA SHOPS OF THE PENNSYLVANIA RAILROAD. Altoona grew quickly as the essential base of operations at the base of the Allegheny Front, n.d. *Courtesy of the Railroaders Memorial Museum, Altoona, PA.*

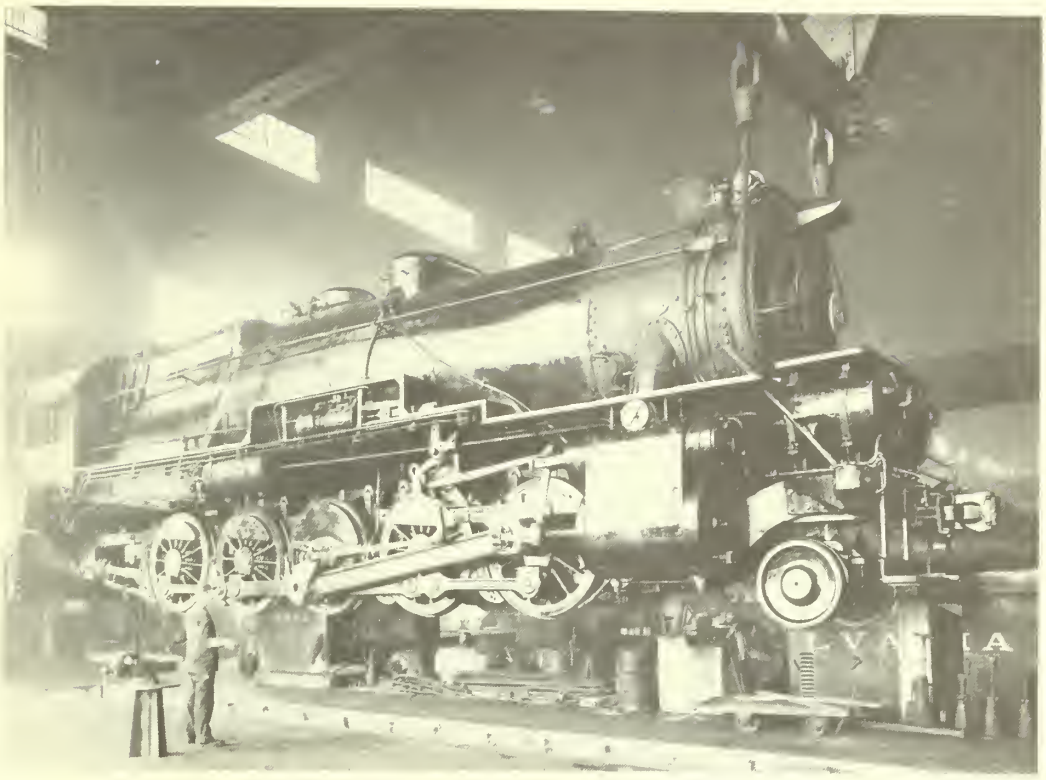
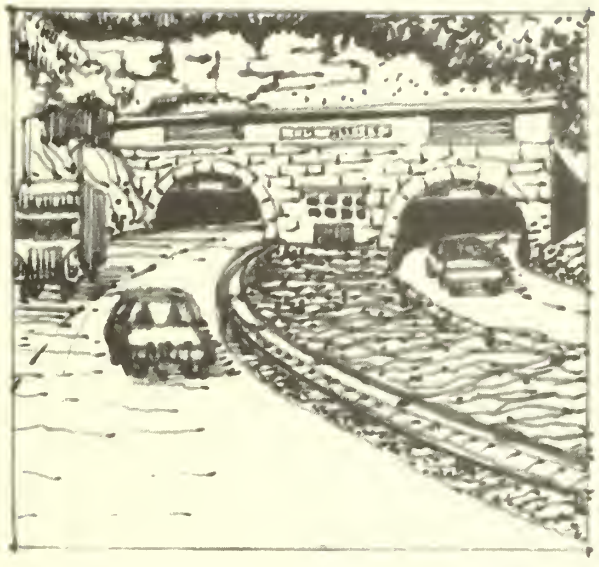


Figure 14: Locomotive Crane. Juniata Shops, Altoona, PA, 1949. Railroad technology dwarfed that of early transportation systems, as well as those who created it. *Courtesy of the Altoona Area Public Library, Altoona, PA.*

Figure 15: Metal Yard No. 1. Altoona Works, 1913. The increasing sophistication of transportation technology often dramatically altered the landscape. *Courtesy of the Altoona Area Public Library, Altoona, PA.*

FIGURE 16: CAR INSPECTION PIT AT THE ALTOONA WORKS, 1930. The transportation systems of the 20th century seemed to engulf the individual. *Courtesy of the Altoona Area Public Library, Altoona, PA.*

FIGURE 17: SECTION GANG. Some might wonder whether transportation systems served humans, or vice versa, n.d. *Courtesy of the Railroaders Memorial Museum, Altoona, PA.*



IV. Transportation in the Automobile Age: Highways, Turnpikes, and Interstates

> The road is that physical sign by which you best understand any age or people . . . for the road is a creation of man and a type of civilized society.[159]

Railroads dominated the region's freight and passenger transportation well into the 20th century. However, in the late 1800s road transportation began to show signs of a mild resurgence. This reflected a growing interest in recreational activity, but it also presaged technological advances in overland transportation that would change the face of American transportation. The development of the automobile ultimately would alter American society and economy as fundamentally as railroads had almost a century earlier.

The bicycle, not the automobile, initially triggered the renewed interest in roads. Although the bicycle had been in existence in one form or another since the early 1800s, its popularity in the United States grew as part of a larger social phenomenon. The rapidly industrializing American economy stimulated the growth of an American middle class that was urban,

159. Horace Bushnell, 1864, quoted in Thomas J. Schlereth, *U.S. 40. A Roadscape of the American Experience.* (Indianapolis: Indiana Historical Society, 1985), 1.

relatively well-educated, and oriented toward the consumption of the very goods that the country's industrial enterprises were producing.

At the same time, the American family was making the transition from a productive to a consuming unit, and an increase in leisure for members of the middle class helped make recreation a consumable commodity. This consumer item appeared in the form of passive entertainments like baseball, football, the arts, and theater. Men and women also became more actively involved in outdoor activities, including bicycling. The growing numbers of cyclists created a demand for the improvement of roadways. Cycling organizations like the League of American Wheelmen were able to bring some effective lobbying pressure on state legislatures to allocate funding for resurfacing roads. As early as 1879, the League of American Wheelmen was able to persuade the Pennsylvania legislature to pass an act creating a system of bicycle and pedestrian paths paralleling the state's highways. [160]

By the turn of the 20th century, bicyclists began to receive support in their push for better roads from other quarters. Automobile enthusiasts were growing in number and added their voices to the calls for transportation improvements. But the automobile was, at this time, even more than the bicycle, a toy for the rich, and the influence of its adherents was limited. However, the lobbying efforts of bicycle and automobile users combined with the expansion of Rural Free Delivery in the 1890s led not only to increased efforts to improve the nation's roads, but also to the creation of the technological and bureaucratic structures necessary for the construction and maintenance of an integrated highway system.

The need for a sophisticated network of highways may appear absurdly self-evident today, but the automobile's potential ability to reorder American transportation and society was not so obvious at the turn of the century. Many Americans, particularly those living in rural areas, were openly antagonistic to the growing automobile culture, which they perceived as an idle pursuit for dilettantes. The increasing number of recreational auto trips by urban dwellers into the countryside resulted in conflicts between motorists and rural inhabitants. At their worst, such confrontations served to widen the gulf between rural and urban America.

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160. William H. Shank, *Indian Trails to Super Highways*, (York: American Canal and Transportation Center, 1988), 50.

In the first decades of the 20th century, however, Americans outside the cities began to provide services for motorists. The economic benefits they derived reconciled them to the realities of the evolving automobile culture. More important, while early automobiles offered urbanites little more than a recreational diversion, they provided rural dwellers the means to escape the sometimes disheartening isolation and monotony of life in the country. Far from being a mere recreational outlet, the car greatly enhanced the social and economic lives of farmers and other rural inhabitants. The refinement of the nation's road network was essential to maintaining a link between rural America and the rapidly evolving urban sector of the United States.

Pennsylvania's road system had with few exceptions degenerated into a rutted morass by the end of the 19th century. A number of former turnpike companies were resurrected, but the task of creating and maintaining a road system clearly was beyond the reach of any private entity. The state of Pennsylvania recognized the necessity of public action and established the Pennsylvania State Highway Department on April 5, 1903.

The creation of a state agency signalled a return to the kind of state involvement in public works that had been repudiated in the aftermath of the Pennsylvania Main Line System's demise, although this first step was still quite limited in scope. Through the state highway department, the Pennsylvania Treasury would grant aid to the counties to build roads and highways, paying two-thirds of the cost of reconstruction.[161] The state itself had no highway mileage. In 1905, the state increased its contribution to three-quarters of the cost of improvements.

These measures in themselves were not equal to the task of improving the state's roads. In some cases, townships and counties did not take advantage of the state subsidy and failed to make improvements on local roads. In response, the state passed the Highway Acts of 1911. This act provided for a far greater degree of public involvement in transportation improvements. The new highway acts would create a system of county roads, with the state paying 50% of the cost of their construction or improvement. More importantly, the acts created a system of state highways that would be funded, improved and maintained entirely

161. Williams, "Pennsylvania Turnpike," 55, and George Beyer, "Pennsylvania's Roads in the Twentieth Century," *Historic Pennsylvania Leaflet No. 34* (Pennsylvania Historical and Museum Commission, 1972), 1.

by the state. The acts also authorized a buyout of the remaining turnpike companies in the state, the creation of rules for road usage, and the power to enforce them.

The move toward road and highway improvement also reflects the larger picture of progressive reform in Pennsylvania that was occurring at this time. The progressive reform spirit that shaped much of Pennsylvania's, as well as the nation's history, undoubtedly carried over into support for a state-supported transportation system.[162] The progressive notion that one function of clean government was to provide efficient services for its citizens created an atmosphere that was conducive to a far greater level of government intervention in the economy and in public works than had been thinkable only a few decades before.

Improvements in transportation also loomed as a more significant issue in western Pennsylvania's major urban center, as well. Pittsburgh continued to experience significant growth throughout the latter third of the 19th century and the first half of the 20th century.[163] The rising popularity of the automobile posed a vexing problem for city planners who had to cope both with the city's rate of growth and with a radically new transportation technology. Even before the automobile became a contributing factor to Pittsburgh's traffic congestion, the city was forced to come to grips with the inadequacies of its infrastructure.

Like virtually all American cities, Pittsburgh had been in its earlier years a pedestrian city. No public transportation existed until the 1840s, and the city was relatively unstratified, in that the members of various classes were relatively closely integrated within the city's core. "Work and residence were often closely linked, and the city's elite — bankers, merchants, industrialists, and professionals — lived largely in the urban core close to governmental,

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162. Progressivism, or the Progressive Era, which lasted roughly 30 years (1890-1920) is a complex and in some ways contradictory series of movements than cannot be summarized in a few paragraphs. Like many reform movements, it looked both forward and backward, toward an idealized future that was based in part on nostalgic recollections of the past. Many progressive reformers believed that the rational foundations of both business and science could be applied to government, in order to take political power from urban political bosses and restore a more traditional "American" form of democracy. "Good government" in turn could be used to address a variety of social ills. Many progressives advocated a level of government activism that ran counter to their earlier political inclinations. This in part reflected their anxieties over the profound changes that occurred in the United States of the late 19th and early 20th centuries, and what these changes meant for their own futures.

163. Joel A. Tarr, "Infrastructure and City-Building in the Nineteenth and Twentieth Centuries" in *City at the Point. Essays on the Social History of Pittsburgh* (Pittsburgh: University of Pittsburgh Press, 1989), 228 and 240.

commercial, and mercantile activities while the working class resided in nearby alleys and streets or in the outlying wards."[164] This resulted in a relatively high population density for Pittsburgh, while the city's dynamic growth rate stimulated the development of other towns and communities along the rivers. As the city continued to grow, it eventually faced the necessity of providing not only some form of public transport for its inhabitants but also some connection with the communities on its outskirts.

Pittsburgh responded with the construction of omnibuses, horse-drawn bus lines, in the late 1840s. These were followed by the development of streetcars on the eve of the Civil War. Railroads provided commuter transportation between the Pittsburgh core city and the other towns along the rivers. The development of a mass-transit system, although badly integrated, allowed Pittsburgh to engage in the first phase of American suburbanization. The existence of efficient transportation into the core city gave the upper and middle classes of the population the option of residing in outlying areas, an option they readily exercised.

Pittsburgh's continued commercial and industrial development within the geographic restrictions of the three rivers area created a transportation bottleneck, particularly in the city's central business district. The public transportation infrastructure was totally unsuited to automobile traffic. In 1900, only one downtown Pittsburgh street was wider than 40 feet, and many of these narrow streets already carried streetcar lines.[165] The introduction of the automobile threatened a transportation gridlock within the city's core. Concerned citizens responded by organizing the Pittsburgh Civic Commission. The commission retained the services of three urban planners to prepare a city plan. Their preliminary plan called for further study of ways to improve the city's infrastructure, including its transportation systems.

One of the planners, Frederick Law Olmsted, Jr.[166] prepared a report that proposed comprehensive changes in the city's transportation network. Olmsted's plan recognized the

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164. Tarr, "Infrastructure and City-Building," 217.

165. Tarr, "Transportation Innovation and Changing Spatial Patterns in Pittsburgh, 1850-1934," *Public Works Historical Society 1978*, 26.

166. Olmsted's father, Frederick Law Olmsted, the designer of New York's Central Park, had pioneered the art of landscape architecture in the United States.

limitations that the city's geography placed on transportation. It also accepted as inevitable the automobile's eventual dominance of the urban transportation scene. His report recommended solutions to Pittsburgh's increasing traffic congestion that were compatible with the city's physical constraints. The city adopted a number of Olmsted's proposals, which contributed greatly to the city's eventual dependence on private transportation.

As Pittsburgh made improvements to its internal transportation network, the state began to improve the arteries that connected the city to the rest of the state. The combination of state and federal aid from the Pennsylvania Highway Acts of 1903, 1905, and 1911 and the Federal Highway Act of 1916 allowed for the construction and improvement of state and federal highways in the same rights of way that had served Pittsburgh in the 19th century. U.S. Highway 22 utilized much of the route of the Huntingdon, Cambria, and Indiana Turnpike. The Lincoln Highway, or U.S. 30, followed the historic routes of the Forbes Road and the Pennsylvania Road. By 1929, about one-third of Pennsylvania's 8,900 miles of paved state highways were in western Pennsylvania. By 1930, a combination of six state and federal highways served the city, reinforcing the city's traditional role as an important national crossroads. One of these, the Lincoln Highway, became one of the nation's first transcontinental highways (see Highways — 1913 to Present map).

> It is a name to conjure with. It calls to the heroic. It enrolls a mighty panorama of fields and woodlands: of humble cabins and triumphant farm homes . . . burrowing mines and smoking factories . . . commerce-laden rivers and horizon-lost oceans. And because it binds together all these wonders and sweeps forward till it touches the end of the earth and beginning of the sea it is to be named the Lincoln Highway.[167]

The creation of the Lincoln Highway offers one of the best representations of the early development of American highways. The highway was the brainchild of Carl G. Fisher, the developer of the Indianapolis Motor Speedway, and the founder of the Prest-O-Lite Company, manufacturer of carbide headlights for automobiles. Fisher was a booster and a developer, inclined toward ideas and plans on a grand scale. Fisher accumulated an enormous fortune, which he lost in the crash of his last and most grandiose scheme, the Florida land

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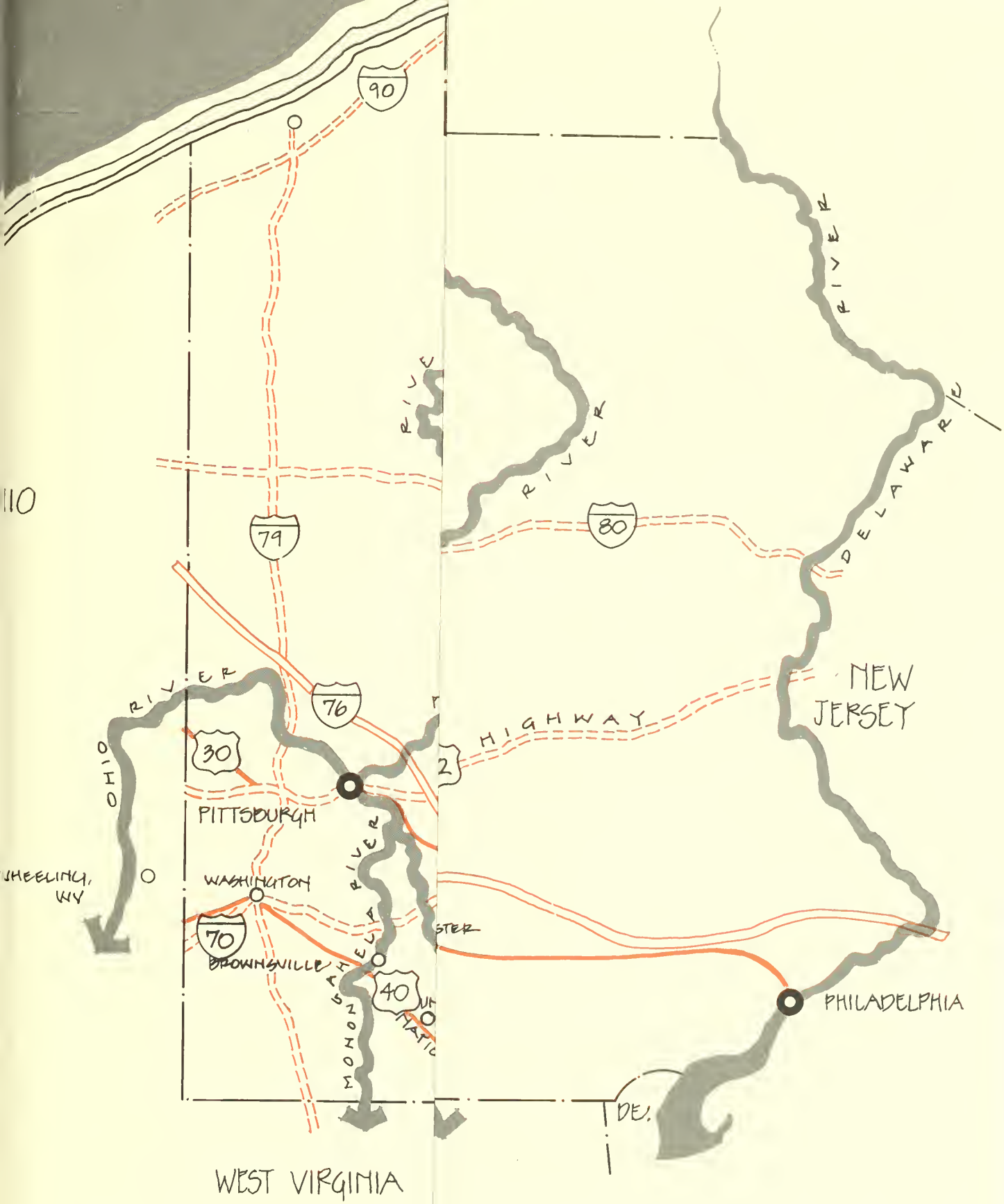
167. Reverend Frank G. Brainard. (Salt Lake City, October 19, 1913), quoted in Drake Hokanson, *The Lincoln Highway. Main Street Across America.* (Iowa City: University of Iowa Press, 1988), 14. Booster hyperbole does not get much better than this. Perhaps the Reverend Brainard enjoyed an advantage from his training for the pulpit.



HIGHWAYS

1913 TO PRESENT

United States Department of the Interior • National Park Service
Southwestern Pennsylvania Heritage Preservation Commission
DSC • 957 • 20127 • Mar 94

NEW YORK

PENNSYLVANIA

RIVER

KEYSTONE

80

79

WEST BRANCH SUSQUEHANNA R.

FRONT

SHORTWAY

SUSQUEHANNA RIVER

DELAWARE RIVER

NEW JERSEY

ALLEGHENY

ALTOONA

HUNTINGTON

WILLIAM

HIGHWAY

22

PENN

OHIO RIVER

76

30

PITTSBURGH

GREENSBURG

JOHNSTOWN

HARRISBURG

WHEELING, WV

WASHINGTON

70

70 76

BEDFORD

LANCASTER

BROWNSVILLE

YOUGHIOGHENY

CONNELLSVILLE

MONONGAHELA RIVER

40

UNION-TOWN

NATIONAL RD.

CHAMBERSBURG

LINCOLN HIGHWAY

YORK

PHILADELPHIA

GETTYSBURG

DE.

MARYLAND

WEST VIRGINIA

CUMBERLAND MD.

N

MILES

0 5 10 20 30 40

TOLL • LIMITED ACCESS HIGHWAYS

FREE • LIMITED ACCESS HIGHWAYS

PRINCIPAL HIGHWAYS

HIGHWAYS

1913 TO PRESENT

United States Department of the Interior • National Park Service
Southwestern Pennsylvania Heritage Preservation Commission
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development boom of the late 1920s. In 1912, Fisher proposed the construction of a transcontinental highway. The Lincoln Highway Association was established on July 1, 1913.

Fisher was joined in the association by a group of wealthy businessmen that included Henry B. Joy, the president of the Packard Motor Car Company, Roy Chapin, the president of the Hudson Motor Car Company, and Frank A. Seiberling, the founder of the Goodyear Tire and Rubber Company. Clearly, many of the leading figures in the automotive industry saw the advantages of promoting a movement for the improvement of the nation's auto roads.[168] The New York to San Francisco highway would be built with funds raised by the association in the form of subscriptions from individuals and from the communities through which the highway passed. The publicity surrounding the planning and construction of the Lincoln Highway helped bring the issue of American highway development before the public.

The development of the Lincoln Highway gave Pennsylvania its first cross-state road since the Pennsylvania Road of a century before. The new highway largely followed the route of this previous road. In doing so, it helped rejuvenate the many towns that had grown up along the old road. These communities had declined as the railroad main lines bypassed them in the latter half of the 19th century.

The passage of the Federal Highway Act of 1916 brought additional funding to portions of the private association highway. It also signalled the first federal effort to aid the in the creation of a road system since Congress had passed legislation for the National Road 110 years ago. The federal government once again would play a significant role in western Pennsylvania's transportation development. This role would broaden dramatically in the next 25 years.

The Lincoln Highway was only one of numerous private associations created between 1913 and 1926. Another association highway created during this period that was of particular importance to western Pennsylvania was the National Old Trails Road, that ran from

168. Fisher attempted to attract the support of Henry Ford to the Lincoln Highway, but Ford firmly refused to associate himself with any effort to fund and build private highways. ". . . as long as private interests are willing build good roads for the general public, the general public will not be very much interested in building good roads for itself. I believe in spending money to educate the public to the necessity of building good roads, and let everybody contribute their share in proper taxes." Hokanson, *The Lincoln Highway*, 8.

Washington D.C., to Los Angeles. This road incorporated the route of the old National Road along with the routes of other historic roads and trails. This highway, like the Lincoln Highway, relied heavily on over-blown promotion and propaganda to attract subscriptions. Its advocates billed the road as the "true course of American Manifest Destiny." This claim, if true, could also be interpreted as the most damning indictment of the road's impact on American history. This statement, like those made about the Lincoln Highway, reveal much about the perception of transportation's role in shaping our history, as well as our perceived ability to dominate our environment. This issue was especially relevant in western Pennsylvania, where the formidable topography continued to pose a challenge to the improvement of transportation.

The National Old Trails Road helped to revitalize the communities that had flourished during the boom times of the National Road from 1818-1850. These highways spurred the construction of cabin camps, motor courts, motels, truck stops, gas stations and garages, roadside diners, and grand hotels for the comfort of well-heeled motor tourists. The growing automobile culture encouraged the development of a new vernacular architecture that profoundly shaped the character of American communities. The roads themselves changed the physical character of the region's landscape. Whereas earlier roads by necessity had followed the contours of the land, new road building technology created wider rights-of-way, shallower grades, and long, sweeping curves. The new roads left a far more visible impression, or scar, on the land.

These roads, like their predecessors, confronted the problem of overcoming the Allegheny Front. The ridge still presented a barrier to travellers along the state's east-west corridors. The growth of the nation's automobile culture created new incentives for overcoming the Alleghenies. The Lincoln Highway in particular exhibited some shortcomings in its crossing of the Ridge. The road's steep grades and sharp turns often proved to be too great a challenge either to automotive technology or the skills of the vehicles' operators.

By the late 1920s, the automobile quickly had evolved from a play thing for the wealthy into a transportation alternative that was beginning to pose a serious challenge to the nation's railroads. The rapid increase in traffic loads was overtaxing the limited highway system that existed. The American Association of State Highway Officials requested that the federal

government intervene and bring some order to the chaotic jumble of roads and highways. In 1926, the Bureau of Public Roads (BPR) devised a plan for a numbered road system that would create a rough grid pattern across the United States. The Lincoln Highway and the National Old Trails Road became parts of U.S. Highways 30 and 40, respectively. This level of federal intervention helped alleviate some of the problems of the nation's highways, but in itself was not sufficient as traffic continued to increase. Pennsylvania Gov. Gifford Pinchot, in his second term (1931-1935), pushed hard for an increase in road construction throughout Pennsylvania, particularly in the rural areas where he enjoyed the bulk of his political strength. To make good on his campaign promise to "get the farmers out of the mud," Pinchot embarked on an ambitious plan to build "more miles of good roads rather than fewer miles of faultless boulevards."[169]

Pinchot's program built hundreds of miles of roads connecting rural Pennsylvania to markets and urban centers, but the narrow "Pinchot roads" followed the contours of the land and were covered with a thin hardened surface that could not withstand heavy traffic loads. They undoubtedly improved transportation throughout much of western Pennsylvania, but they did not offer a long-term solution to the problem of national highway development. The science of highway construction itself would have to evolve to keep pace with the improvements in automobile technology. In the late 1930s, western Pennsylvania would become the setting for the development of a new kind of highway, one that would be a prototype both for American highway technology and federal assistance to the improvement of the nation's transportation infrastructure.

By the time Governor Pinchot had embarked on his road improvement program, Pennsylvania, along with the rest of the nation, was absorbing the brunt of the Great Depression of 1929-1941. The number of automobile operators in western Pennsylvania apparently declined in the early and mid-1930s,[170] as did vehicular traffic.[171] At the

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169. Philip S. Klein and Ari Hoogenboom, *A History of Pennsylvania*, 453.

170. This statement is based on data that Joel Tarr has compiled and analyzed for Allegheny County between 1929 and 1934. In this period, automobile registration declined 44.6%. We may reasonably assume that this trend is not an aberration, and that it carried over into other parts of western Pennsylvania. This predominantly rural area, like other agricultural sections of the country, was particularly hard hit by the Depression.

171. Williams, "The Pennsylvania Turnpike System," 2.

same time, the state's unemployment figures skyrocketed, reaching a peak of 37.1 percent unemployment in March of 1933.[172] Pinchot's road projects, therefore, focused almost as much on work relief as on transportation improvements. The Pinchot roads were designed to be constructed with a maximum of human labor, utilizing mechanization as little as possible.

The Depression dramatically affected the state's political traditions, as well. Since the end of the Civil War, Pennsylvania had been a rock-solid bastion of the Republican Party. The Democratic Party in the state for decades had been little more than a straw man virtually unable to win any statewide elections. The Depression threw this political hierarchy out the window. Although the state's Republican party had implemented some Progressive reforms, the urban machines of Philadelphia and Pittsburgh that controlled the party resisted widespread change. The state elected Pinchot, a Progressive disciple of Theodore Roosevelt unaffiliated with the Republican machines, to two terms, but this occurred only when the party was split into various factions. Pinchot initiated some relief measures, including his road program, but the Republican party's opposition to Franklin Roosevelt's presidential candidacy and the first New Deal opened the door for the creation of a viable alternative to decades of Republican control of the state's political process.

Pennsylvania's revitalized Democratic party embarked on a program of liberal reform that paralleled that of the New Deal. Relief and reform in Pennsylvania increasingly occurred as a result of cooperation between the state and federal government. Much of the aid for recovery appeared as funding to improve the state's transportation systems. The National Industrial Recovery Act provided $19 million for improvements to the state highway. Other aid for roads came through the Works Progress Administration, which employed 143,000 men in the state by November 1938.

The federal government made its most significant contribution to Pennsylvania's transportation by assisting the state's effort to build a four-lane, high-speed, limited access highway. The construction of the Pennsylvania Turnpike represents one of the best examples of the state's "Little New Deal" public works spending projects. The turnpike, like many other

172. Klein and Hoogenboom, *A History of Pennsylvania*, 450.

improvement projects in the state's history, combined attempts to alleviate unemployment and revitalize the state's economy with the more tangible ambition of expanding the state's transportation infrastructure.

In fact, unemployment relief was the chief incentive behind the Patterson Resolution,[173] the original legislation that called for a feasibility study of the turnpike concept.[174] State officials moved quickly to secure federal assistance for the project. Directly or indirectly, the United States government financed virtually all construction of the initial 160-mile segment of the turnpike from Carlisle, west of Harrisburg, to Irwin, east of Pittsburgh. Pennsylvania secured an outright grant of 29.5 million dollars from the Public Works Administration. In addition, Reconstruction Finance Corporation purchased $40.8 million in turnpike bonds.[175] The RFC committed to buying all bonds required for construction, because the Turnpike Commission initially had little success in finding buyers in the private sector.

The difficulty in attracting investors, in part, is due to the fact that the turnpike was a radical departure from American highway planning and design. Never had a toll automobile highway or bridge of this scope been built in the United States. In addition, the federal government's Bureau of Public Roads adamantly opposed the construction of toll highways, on the basis that toll highways could not support themselves. Much of the support for the improvement of American highways had come as a result of the success of the German autobahn system. But the bureau's director, Thomas H. McDonald, resisted any changes in highway policy based on comparisons of the U.S. and German systems. BPR engineers argued that the underlying philosophies of the two were so radically different that a fair comparison was impossible. The autobahns had been constructed to encourage auto use, which, Depression notwithstanding, was the least of the United States highway system's problems. The autobahn's success led many American highway engineers to consider seriously the construction of an American network of super highways, but the bureau also resisted this

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173. House Resolution No. 138, named for its sponsor, State Representative Cliff S. Patterson, who introduced the bill on April 23, 1935.

174. Williams, "The Pennsylvania Turnpike," 84; Dan Cupper, *The Pennsylvania Turnpike. A History* (Pennsylvania Turnpike Commission), 6.

175. The Reconstruction Finance Corporation played an important part in the Roosevelt New Deal, but it was actually created during the Hoover administration to provide funding to banks and other depressed corporations.

concept, saying that such a system could not adequately serve the interests of the majority of American motorists.[176] The BPR under McDonald maintained that funding should go to improve urban highways, and that two-lane highways would be adequate for most interstate travel.

The Pennsylvania State Highway Department also opposed the Pennsylvania Turnpike, and its opposition led to the creation of the Pennsylvania Turnpike Commission. The commission acquired the federal funding to commence design, acquire land, and begin to make improvements on the selected right-of-way.[177] In less than two years, the commission oversaw the construction of 160 miles of highway, 7 tunnels, (6 of which initially had been excavated for the South Penn Railroad), 11 interchanges, and 307 bridges and culverts. The turnpike opened on October 1, 1940. The number of motorists on the highway exceeded the forecasts of the turnpike's traffic planners and completely repudiated the pessimistic forecasts of the BPR. Until the beginning of World War II, the turnpike carried almost twice the number of vehicles that originally had been projected (see figures 18 and 19 at the end of this chapter).

The Pennsylvania Turnpike's limited access design signalled a radical departure from early road systems, which had been built in part to link communities. As the turnpike bypassed communities, its designers had to provide alternatives to the services that travellers normally would have found in the region's towns and cities. Turnpike engineers designed and built 10 service plazas, at 25-30 mile intervals. These plazas, which offered food and fuel to travellers, were leased to the Standard Oil Company of Pennsylvania. Standard in turn subleased the food and gift concessions to the Howard Johnson's restaurant chain.

Curiously, the service plazas were built in a style reminiscent of colonial Pennsylvania housing. Perhaps the turnpike's designers felt that this most modern of highways needed

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176. Bruce E. Seely, *Building the American Highway System. Engineers as Policy Makers,* (Philadelphia: Temple University Press, 1987), 161.

177. Much of the turnpike's right-of-way would follow the right-of-way of the South Penn Railroad, an abortive attempt by Andrew Carnegie and William H. Vanderbilt of the New York Central Railroad to create viable competition for the Pennsylvania Railroad. Although never completed, the South Penn's gentle grades provided a superior auto route, as compared to either U.S. highways 22 or 30, the other Pennsylvania cross-state highways.

some link, however forced, with the state's past transportation traditions. They created an instantly quaint setting for the plazas, a totally functional service station with a historical false front completely unrelated to the automobile era. The service plazas foreshadow an almost Disneyesque reinvention of reality, in which the imposition of "historic" architecture forces a false patina of tradition, of historical continuity, on a revolutionary transportation technology.

The turnpike's immediate success foreshadowed significant changes in American highway planning and design. Clearly, the BPR's claims that a toll highway could not pay for itself had been seriously undermined. The highway's dramatic financial returns triggered a post-war boom in toll road construction that ended only with the passage of the Federal-Aid Highway Act of 1956.[178] The turnpike also played a role in revising the nation's defense planning. The shortcomings of France's road system in its defeat to Germany cast doubt on the BPRs assertion that the nation's highway network was adequate for national defense. The turnpike's efficient function during the war impressed upon Congress the importance of efficient transportation to facilitate internal defense. Cold war anxieties over a possible armed conflict with the Soviet Union provided additional impetus for the creation of an integrated system of limited access highways, modeled in part on the Pennsylvania Turnpike.

The Turnpike Commission acted quickly in the post-war era to extend the turnpike's route, first to extend the road to Pittsburgh and Philadelphia, then to connect it with highway systems in other states. By 1954, the turnpike had been linked with both the New Jersey and Ohio turnpikes. By the late 1950s, "motorists could travel between Maine and the Indiana-Ohio border (soon to be extended to the Chicago metropolitan area) without encountering a single stop light, cross street or grade crossing."[179] The turnpike played an essential role in reinforcing western Pennsylvania's traditional role as a transportation corridor in the 20th century.

The turnpike clearly set a standard for the design of American limited access highways. Its influence on highway funding was much more limited. Although a number of turnpikes

178. Seely, Bruce. *Building the American Highway System*, 221.

179. Cupper, *The Pennsylvania Turnpike*, 31.

based on the Pennsylvania model were constructed in the late 1940s and early 1950s, the majority of superhighway advocates, including the trucking industry lobby, automobile clubs, and the American Association of State Highway Officials, opposed direct user fees to fund and maintain an interstate system. These groups and others favored funding based on gasoline taxes and other automobile-related items. However, the turnpike's demonstrated success in facilitating a large volume of long-distance auto traffic certainly reinforced the argument for the creation of an interstate highway network.

The development of the network known commonly as the interstate highways developed, as had other transportation systems before it, as a combination of transportation improvement, public subsidy to the private sector, and economic leveler. The Cold War added a new dimension to the history of transportation development. The interstates were intended not only to provide for civilian travel, but the movement of military forces, as well.

The interstate program was the favored son of the Eisenhower administration's domestic programs. In contrast to the radical elements of the Republican Party who reacted against two decades of Democratic dominance of national politics by attempting to dismantle significant elements of the New Deal, President Dwight Eisenhower assumed a more moderate posture. He and the leaders of the party's center kept much of the New Deal policies intact, including planning for an interstate highway network.

Eisenhower in particular felt a strong attachment to the interstate concept. The president saw the system, like its many transportation predecessors, performing more than one important function. One, it would facilitate civilian travel by increasing highway safety, relieving traffic congestion between urban and suburban areas, and providing efficient linkages between the country's major urban centers. Two, it would enhance internal defense capabilities. Three, federal highway spending would provide an effective way to moderate dips and peaks in the national economy. In 1956, Congress passed the Interstate Highway Act, which provided for the construction of 41,000 miles (later increased to 42,500 miles) of limited access highways. The federal government would fund 90% of the cost of the system.

The interstate highways symbolize the shift in emphasis of American transportation development in the 20th century. The system accelerated the transition from mass transit to

private transportation. In fact, it was the largest single factor in that transition in the years after World War II. The interstates definitely improved travel between the nation's major urban centers, and by facilitating commuting between inner city and suburb, contributed greatly to the wave of post-war suburbanization. However, this process also played a significant role in the rapid deterioration of the nation's core cities, as more affluent urban dwellers fled the city for the suburbs.

The American urban setting changed as new communities sprang up by the hundreds along the interstate corridors. Retailers began to depart downtown areas to move to suburban shopping centers, further depleting the city's tax base. Urban mass transit declined, as the vast majority of public spending was redirected toward improvements of the automobile infrastructure. "[Seventy-five] percent of all government transportation dollars (local, state, and federal) went to subsidize travel by car and truck; only 1 percent was earmarked for urban mass transit."[180] Clearly, federal spending on the interstate system represented an enormous subsidy to the American middle class.

The interstate system has a significant presence in western Pennsylvania. The Pennsylvania Turnpike has been incorporated as part of Interstate 70, a route running from Washington D.C., to central Utah, where it connects with Interstate 15 to complete a transcontinental artery. Interstate 80, a true transcontinental highway connecting New York and San Francisco, bisects the state just north of its east-west center line. The highway passes through western Pennsylvania approximately 50 miles north of Pittsburgh. This road was originally conceived as the Keystone Shortway, a second cross-state toll highway, but this plan was altered with the passage of the interstate highway legislature in 1956.

As was the case in other parts of the country, Pennsylvania officials saw little reason to construct highways with state funding when the federal government could be persuaded to pay 90 percent of the costs. The subject of the political machinations involving local and regional efforts to secure additions to the interstate system has not been fully explored, but clearly, the commonwealth of Pennsylvania had much to gain from the designation of a second East-West interstate route.

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180. Davidson, *Nation of Nations*, 1122.

Politics aside, however, the Keystone Shortway's created a valuable transportation artery. It became part of the shortest, most efficient transcontinental highway route in the country. For Pennsylvania, it brought a modern transportation system to a region that had not enjoyed the same level of transportation improvements as the rest of western Pennsylvania. The highway also relieved congestion on the Pennsylvania Turnpike. This highway has opened new opportunities for economic development for the area through which it passes, as have so many other transportation arteries in the region's history. Together, Interstates 70 and 80 have reinforced the region's historic role as an important corridor for travel between East and West.

Another interstate route, Interstate 79, runs north and south in the extreme western part of the state, from the West Virginia line through Pittsburgh, to Erie. Although this highway serves more as a regional artery, it strengthens the traditional transportation link between Pittsburgh and the Great Lakes. The highway also provides a limited-access connection between the two East-West interstate corridors.

The future of western Pennsylvania's interstate system, like that of the system throughout the nation, is somewhat clouded. The maintenance needs of this vast network have exceeded all early estimates. The interstate system required massive improvements even before it was completed. The state's east-west arteries require major repair and reconstruction. In an ironic twist on the history of the interstate program, both state and federal officials are considering seriously expanding the state's current toll road network in order to raise funds for refurbishing the system. The state has studied a concept for converting the Keystone Shortway into a toll road, as was originally proposed.[181] The very system that effectively killed the toll highway movement may be forced to revive toll-based funding for its very survival.

Regardless of the eventual solution arrived at for maintaining the integrity of the region's highway system, western Pennsylvania almost certainly will remain a vital corridor in the nation's transportation network. The United States has yet to show any inclination to divorce itself from its dependence on motor vehicles as the dominant technology for transporting

181. David J. Cuff, et al., ed., *The Atlas of Pennsylvania*, (Temple University Press: Philadelphia, 1989), 186.

passengers and freight. The region's interstate arteries will continue to provide an essential function within the national transportation network.

Although western Pennsylvania's railroads have declined steadily since the 1930s, and rapidly since the end of World War II, they still remain as an important element of both the regional and national transportation picture. A number of alterations in the railroads' organizational operational structures have allowed them to provide efficient freight service. As traffic congestion, urban sprawl, air and water pollution, and other environmental impacts related to automobile use worsen, the nation may make a more concerted effort to redirect its energies toward other transportation alternatives. More efficient light rail and high-speed rail for interurban and interstate travel may offer viable alternatives to automobile travel. The replacement of the automobile as the mainstay of American may strike some as pure fantasy. But who in 1900 would have predicted the decline and eventual demise of the railroad oligarchy? (See figure 20 at the end of this chapter.)

The historic functions of the western Pennsylvania transportation corridor have evolved in a dramatic and complex pattern over the centuries, yet the corridor's essential character has remained remarkably consistent. The region still enjoys a vital geographic location that establishes it as a natural crossroads, regardless of the technological changes that have taken place over time. Its existing transportation systems still can adapt to whatever direction national transportation developments may take. Although western Pennsylvania's traditional industrial base has all but evaporated, the evolution of its urban and rural areas will still require the support of a transportation network. In all of Pittsburgh's radical changes over the last 40 years, one improvement to its infrastructure perhaps best symbolizes western Pennsylvania's link to its historic traditions: the construction of a new airport to serve as a hub for a major air carrier. As it has so often in the past, transportation technology will continue to adapt to the complex landscape of western Pennsylvania.

FIGURE 18: ROUTE #350 NEAR TYRONE, BLAIR COUNTY, PA. Early highway construction projects often fit the contours of the surrounding landscape, n.d. *Courtesy of the Pennsylvania State Archives, Harrisburg, PA.*

FIGURE 19: CLEAR RIDGE CUT, OCTOBER, 1940. The more sophisticated Pennsylvania Turnpike had a markedly greater impact on the land. *Courtesy of the Pennsylvania State Archives, Harrisburg, PA.*

PHOTO 20: EXCAVATION FOR THE FOUNDATION OF THE U.S. STEEL BUILDING, PITTSBURGH, 1966. The excavation uncovered the tunnels of the Pennsylvania Main Line Canal and the Pennsylvania Railroad. This extraordinary juxtaposition illustrates the way in which transportation helped lay the city's foundation and also symbolizes the historic link between the transportation and steel industries. *Courtesy of the Historical Society of Western Pennsylvania.*

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The Southwestern Pennsylvania Heritage Preservation Commission is a federally appointed organization within the Department of the Interior. The commission is a catalyst for partnership efforts to conserve, interpret, and promote the sites, landscapes, and stories of America's industrial heritage in southwestern Pennsylvania. Through this conservation and commemoration effort, the commission will also stimulate economic development in the region. This product was prepared for the commission through a partnership effort with the National Park Service.

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