Railroads, Deforestation, and the Transformation of Agriculture in the West Virginia Back Counties, 1880-1920

by

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ABSTRACT: Industrial development transformed the back counties from a subsistence to a market economy spawning towns, commerce, and population growth. The railroads tied the back counties into the national markets, but also brought in goods produced outside the region, including farm products from the Midwest. Local farmers either became marginalized, or were forced to adopt the commercial system. Farmers who made the shift soon found that they could neither compete in the marketplace, nor could they return to the old subsistence system of the past. Consequently, farming went into decline.
RAILROADS, DEFORESTATION, AND THE TRANSFORMATION OF AGRICULTURE IN THE WEST VIRGINIA BACK COUNTIES, 1880-1920

Ronald L. Lewis
West Virginia University

For the first century after settlers planted frontier society in what became West Virginia, change came slowly. Then, between 1880 and 1920, the world underwent a profound transformation for the scattered farm population who occupied the West Virginia "back woods" with the penetration of industrial capitalism into the vast virgin forest of the state's interior. The forest was indeed enormous, for as late as 1880 when timber extraction began in earnest, two-thirds of the state remained under virgin forest. It is a measure of how swift the transformation to an industrial economy occurred that, except for isolated pockets West Virginia had been completely denuded of virgin forest by 1920. The enormity of the timberman's calculations are difficult to comprehend, but it is estimated that over thirty billion board feet of lumber were stripped from the West Virginia landscape during this period.¹

As with coal, the state's other major natural resource, the development of the timber industry was possible only after the railroads were constructed to haul the timber to market. Every facet of life in West Virginia was affected by railroad and timber development, but no section of the state was so dramatically altered as the undeveloped back counties, and no sector of the backcountry economy so fundamentally transformed as

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was agriculture. The primary purpose of this essay is to sketch the process precipitated by railroad development and the timber boom which transformed the subsistence agricultural system of the nineteenth century into the commercial system of the twentieth century. In southern West Virginia, the transforming influences of the timber industry are difficult to separate from the more powerful coal industry because timber was cut and processed for consumption by local industry. In order to isolate the consequences of the extraction of timber for distant markets, therefore, the interior mountain counties where timber was the most important (and sometimes the only) industry are the primary focus of this study.

Economic development was neither a new concept, nor was it imposed on West Virginians by "outsiders." Indeed, from the state's founding in 1863 well into the twentieth century, industry-oriented public officials promoted development of West Virginia's natural resource extraction industries. In 1906, The Manufacturers' Record reported that in West Virginia "the entire machinery of State government" was utilized "to attract capital to the State to develop its railroads, its coal, and its timber interests." Governors, Congressmen, and Senators were all recognized promoters in Eastern financial circles, and in this respect, the business periodical noted, "West Virginia holds a unique position not duplicated by the governmental machinery of any other State in the South." Reinforcing the booster spirit among industrial developers was the aspiration of most West
Virginians for a material improvement in their economic condition. The assumption that the state's abundant timber and coal resources would provide the basis for industrial development grew into a conviction that was seldom successfully challenged. Nor was its corollary, that only the railroads to transport those resources to market were lacking.⁴

Boosters were captivated by the popular conception of the railroad as the great modernizing agent that would bring civilization out of the wilderness. Since the arrival of the first English colonists, Americans had equated the forest with primitivism, the lack of "civilized" society and high culture. Hence, its elimination connotated the triumph of civilization over "raw nature," the ascent to a European cultural standard. In this world view, elimination of the wilderness became a metaphor for the rise of America as a civilized society.⁵ West Virginia developers concurred with this view. "What wonder that the heart of West Virginia is set on railroads," proclaimed The Wheeling Register in 1881, "they are the life giving currents of modern civilization without which prosperity and progress are solecisms." The article captured the prevailing economic faith of the era in its proper metaphoric context when it declared: "We must have railroads. . . . We must help our people out of the woods."⁶

Two of the major railroad lines which traversed West Virginia on the eve of the transformation originally were constructed to connect the East with the agricultural Midwest.
The Baltimore and Ohio Railroad entered the northern tip of the state and then followed the most direct route available to Ohio, completing its line through West Virginia to Wheeling in 1853. Twenty years later, in 1873, the Chesapeake and Ohio Railroad completed its trunk line in the southern part of the state, passing through the New and Kanawha river valleys to Huntington. A third major railroad, the Norfolk & Western, penetrated the southern part of the state in 1888 and completed its main line between Norfolk, Virginia and Huntington, West Virginia in 1892. Unlike the B & O and the C & O, the N & W was organized for the purpose of tapping the rich coal reserves of southern West Virginia, and this line became the dominant force in the development of the southern coal fields. A better example of how large land-holdings were concentrated in the hands of a few corporations, the characteristic pattern of the Appalachian coal industry, would be difficult to identify. The N & W was essentially a land-holding company divided into land, coal, timber, and railroad divisions which controlled hundreds of thousands of acres.

Between the B & O and the C & O lay a vast virgin forest. Neither of the two railroads initially intended to risk investment in development within the state, however, leaving a large field of opportunity for West Virginia capitalists, most notably the industrialists—Senators Johnson Newlon Camden, Henry G. Davis, and Stephen B. Elkins, who were the first entrepreneurs to successfully build railroads into the state's interior.
forests. Their fledgling systems penetrated the central interior counties from the north, and laid the foundation for development of the timbershed on the western slopes of the Allegheny Mountains. The C & O completed the strategic encirclement of the mountains by constructing its Greenbrier Division northward up the Greenbrier Valley along the state's southeastern border to connect with the railroads penetrating the forest from the north.⁹

Numerous small independent railroads sprouted out from the mainlines. These, and more than six hundred logging railroads, completed an elaborate web of rails which linked the processing mills along the mainlines with the cutting face deep in the forest. Although difficult to evaluate precisely because they were constantly being pulled up and rebuilt, at least forty of the fifty-five counties in West Virginia had one or more logging railroads, the number varying from one in Taylor County to more than sixty in Pocahontas. The largest number of these lines were located in the interior mountain counties of Randolph, Tucker, Pocahontas, and Nicholas.¹⁰

Even excluding the small logging and tram roads, track mileage in the state doubled in the 1880s, doubled again in the 1890s, and covered 3,705 miles in 1917.¹¹ The coming of the railroads saw small towns spring up along the lines like wild flowers where previously there had been only a thinly scattered farming population. According to James Morton Callahan, a prominent state historian writing in 1913 at the peak of the
timber boom, the railroads "carried into the silence of the primeval woods the hum of modern industry," which brought forth "gigantic lumber plants" and bustling new towns.¹²

Pro-industry newspapers seldom lost an opportunity to beat the development drum. In 1884, for example, a reporter for The Wheeling Register, wrote from Buckhannon, Upshur County, that prior to the arrival of the short B & O connecting line the previous year, Buckhannon had been "a quiet, pleasant, but apathetic little country town." Now, he observed, the "noise of pounding hammers" was heard from every direction, drays moved constantly through the streets, and new churches, stores, and schools were built. Also, a large woolen mill, a handle factory, a large planing mill, two wagon and carriage factories, saw mills, lumber yards, a log boom, and two large flouring mills had been constructed in the village. Given the economic development stimulated by railroads, the reporter declared, "it is not surprising that the people further on in the interior are longing for the time to come when capital and enterprise shall reach their borders and unlock their doors."¹³

"Capital and enterprise" followed Senator Davis's Coal and Coke Railroad from Elkins to Durbin in the northern section of the mountains where forty-nine saw mills cut their way through the virgin timber along the main line alone. Capital also reached the Greenbrier Valley in 1903 with the completion of the Greenbrier Division of the C & O. The economic stimulus given to the mountain economy is illustrated in the observation of a
visitor who reported in late 1903 that "the Greenbrier Valley has become a hive of industry," and that the newly opened territory in northern Pocahontas, and along the Coal and Iron Railroad experienced "the influx of men and capital akin to an Oklahoma rush." The extent of development along the Greenbrier "astonishes the imagination," he continued, and "the fanciful dreams of a recent past are outstripped in the realization of today." The Greenbrier Division, hauled out almost exclusively products of forest and farm from along its one hundred miles of main line, and spawned the growth of lumber operations and mill towns which literally sprang up out of the wilderness. At least forty-four mills were in operation along the Greenbrier Railroad in 1902, and the railroad prompted the development of other wood product industries, such as a kindling wood plant, a stave mill, and two tanneries.

The level of capital investment during the timber boom is indicated by the U. S. Census data on value of products produced in Tucker, Randolph, and Pocahontas counties, three of the major lumber-producing mountain counties opened by the railroads. Between 1880 and 1920 the value of products produced exploded from $5,608 to $4,395,531 in Tucker County, an increase of 78,280 per cent; from $49,487 to $7,583,106 in Randolph, an increase of 15,223 percent; and from $45,544 to $10,937,955 in Pocahontas, an increase of 23,916 percent. As suggested by the investment data, the railroads signalled a new era in the exploitation of the virgin forest. Timber operators were able to bring in by
rail steam skidders, which were absolutely necessary for dragging logs up out of canyons, or across swampy areas, and steam loaders, which replaced men with machine power sufficient to load big timber onto flatcars. 17 Without the steam-powered heavy equipment required to cut, transport, and process the big timber, vast segments of the countryside could not have been deforested.

An economic interdependency existed between the railroads and the large mills. The railroads required the assurance of a high volume of business to justify their investment; the mills required assurance of efficient transportation to urban markets. 18 An impressive number of band saw mills, the most technologically sophisticated operations, were established in West Virginia between 1890 and 1910. In 1909, the peak production year, eighty-three band mills and 1,441 other lumber establishments produced 1.5 billion board feet of lumber in West Virginia. The total number of band mills to have operated in the state during this period is estimated at two hundred. 19 The two largest mills in the state were triple band mills, operated by the Blackwater Boom and Lumber Company at Davis, Tucker County, and the Meadow River Lumber Company at Rainelle, Greenbrier County. Their capacity was voracious. The Meadow River mill, for example, was capable of producing over 200,000 board feet of lumber in a single day. The largest hardwood lumber mill in the world for a time, it consumed 3,000 acres of virgin timber a year. 20
Development of the timber industry attracted large numbers of workers seeking employment in the logging camps, lumber mills, or other forest-related industries. (See Table 1) Not only did the population grow exponentially, it also became diversified by an infusion of workers from the northern states, Pennsylvania in particular where the timber supply was becoming depleted, and by foreign immigrants.\textsuperscript{21}

<table>
<thead>
<tr>
<th>County</th>
<th>1880</th>
<th>1890</th>
<th>1900</th>
<th>1910</th>
<th>1920</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tucker</td>
<td>3,151</td>
<td>6,459</td>
<td>13,433</td>
<td>18,675</td>
<td>16,791</td>
</tr>
<tr>
<td>Randolph</td>
<td>8,102</td>
<td>11,633</td>
<td>17,670</td>
<td>26,028</td>
<td>26,804</td>
</tr>
<tr>
<td>Pocahontas</td>
<td>5,591</td>
<td>6,814</td>
<td>8,572</td>
<td>14,740</td>
<td>15,002</td>
</tr>
</tbody>
</table>

Source: U.S. Census of Population.

Trains carried away forest products, but they also returned with manufactured goods such as food, dry goods, household furnishings, farm supplies, and whatever else people ordered out of the mail order catalogs which supplied the needs of town dwellers and improvement-oriented farmers. The railroad connected local communities to the national markets, and as elsewhere in rural America exerted a profound influence on the way people lived.\textsuperscript{22} With the circulation of cash, and the rise of a significant population of wage-earners, who either lived in town, or came into town for the social life and or supplies, merchants were increasingly attracted by the possibilities of trade with the surrounding countryside.\textsuperscript{23}

Its economic vitality notwithstanding, the railroad-timber boom encountered some local opposition. The most wrenching
changes spawned by deforestation were visited on agriculture, and these changes were not always enthusiastically received. Whereas the promoters of development looked to the world of the twentieth century and saw economic opportunity and material progress in big business, those who resisted chose to hold onto the world of the nineteenth century dominated by independent freeholders whose lives were ennobled by self-sufficiency and independence from those same large institutions. Instead of economic opportunity they often saw moral corruption. The developers' attacked these conservative agrarians relentlessly in their newspapers.\textsuperscript{24} As one promoter observed in \textit{The Wheeling Register}, it was unfortunate for "the development of our rich young state there is a good deal of the musty elements of old fogeyism among our people," which has served as a retardant to "progress and prosperity." Those who resisted development were a "powerful element" composed of "the old leaders who moulded public sentiment in former days when their antiquated ideas were adapted to the conditions which then existed." The paper rejected these "musty elements" because society had "passed into a new era, and stands on another stage where different principles apply and other methods are necessary to carry us forward with the onward tide of progression."\textsuperscript{25}

Some farmers did ground their opposition in a conservative moral and social world view. A. B. Brooks, the state's best-known conservationist, voiced their objections in 1910 when he wrote of "a great change in the character of the people." Within
a comparatively few years nearly "the whole population," which previously had earned its living from the land, was "pushed out from places of seclusion into the whirl of modern industry." The railroads and timber operations attracted "a different class of people whose manners and language were readily adopted by the younger people." Thousands of young men were induced to work on the railroad, or in the logging camps and lumber towns where they were "thrown into intimate association with a rough, drifting, foreign element." Consequently, farmers frequently complained that their sons left the homesteads to take industrial jobs, and so the farms had fallen into neglect and were "grown up in briers." The young men became dissatisfied with farm work, Brooks lamented, and "a spirit of selfishness and coolheaded business" took the place of the "hospitality that once prevailed."26

Many farmers opposed the railroads, including the logging lines, because they feared economic losses from the destruction of their livestock and property by the locomotives. For example, in the southern part of the state, The Greenbrier Independent ran articles in 1872 opposing construction of the Chesapeake and Ohio Railroad because "it carried whiskey, killed chickens and cows, scared the horses, and threw teamsters out of employment."27 Residents of Tyler County rejected a right of way for the B & O because "the trains would scare the game out of the country."28 Similarly, farmers held public meetings to oppose the B & O running a line through Monongalia County to Pennsylvania
declaring "we don't want our hogs and cows run over and killed." 29

These concerns, seemingly quaint to modern readers, represented real problems to farmers of the nineteenth century. Because the industrialists ultimately prevailed, opponents of the railroads seem to have been out of touch with the times, their worries backward and archaic. But that is to misunderstand the dynamics within which they made their social and economic choices. West Virginia farmers had sound reasons for their fears. While they had legal tradition on their side, the world which had created that tradition was being reconstructed around them, isolating them, rendering them vulnerable in a way they were powerless to stop. The Virginia legal tradition, which had been evolving since the early years of the Republic, protected the agrarian status quo, including the interests of agricultural landowners against the encroachment of industrialists. As heirs to this judicial legacy, West Virginia jurists and law-makers were compelled to modify the law and its interpretation if railroads were to lay the rails of economic development.

Since the 1970s a controversy over the role of the courts in America's industrialization has been waged among historians of the law and industrialization. The most prominent interpretation for the past two decades is that the courts "subsidized" industrial enterprise by depriving the victims, mainly farmers and workers, of just compensation for injuries imposed on them by industrial activity. Scholars who take exception to this
interpretation generally either dismiss it as a "conspiracy theory" of history, or delve into case histories to demonstrate empirically that the courts were indeed protective of victims' rights.\textsuperscript{30} The legal dimensions of this controversy for industrial development in West Virginia raises issues of such magnitude that to address them here would refocus the purpose of this essay. There can be no controversy, however, over the fact that the Virginia legal tradition took a new, decidedly pro-industry course in West Virginia.

Until the Civil War, American courts staunchly supported the legal rule of \textit{sic utere tuo ut alienum non laedas} ("so use your own as not to injure that of another") in cases involving conflicts of property rights and nuisances emanating from the use of that property. At the beginning of the nineteenth century, jurists generally viewed property as a "natural right," and by extension, owners possessed the right against interference by others in the use of their property. This reasoning, of course, protected the status quo dominated by the agricultural interests. Industrial development, however, refocused natural property rights because of the nuisances created by industrialists in the use of their property.\textsuperscript{31}

Throughout the nineteenth century the Virginia Supreme Court adhered to what has been called a "static" theory of property rights which focused on the rights of agricultural plaintiffs who generally prevailed against industrial defendants.\textsuperscript{32} Early West Virginia nuisance decisions conformed with Virginia legal
tradition by upholding the plaintiffs' right to be free of interference in the enjoyment of their property. In 1889 and 1890, however, the Supreme Court of Appeals underwent a complete transition in justices. The new judges abandoned the static view of their Virginia-trained forbearers, and adopted a dynamic theory which recognized the economic use of property for commercial and industrial enterprise as well as for agriculture, reflecting the long-standing development wishes of business and government leaders.33 The significance of this transformation of nuisance law readily became apparent to farmers in how jurists applied the law in fencing cases, in assessing damage liability for livestock killed by locomotives, and in cases involving fires ignited by locomotive sparks.

In Virginia, agriculture continued to enjoy legislative and judicial preference, but in West Virginia the court increasingly gave priority to industrial developers. The Virginia Code required railroads to protect livestock by fencing in the right of way.34 In 1903, in Sanger v. Chesapeake & Ohio Ry. Co., the state court went even further to declare that "a railroad company is liable to the owner of stock killed or injured on its track by one of its trains, although he owned no land either at the point where the stock was killed or injured, or at the point where the stock came upon the track, though the only negligence alleged was the failure of the company to fence its track as required."35

This was a far more sweeping protection of the farmers' property than in West Virginia where aggrieved farmers were
forced to prove that the railroad was negligent in operating its equipment in order to secure damages. Moreover, the West Virginia Supreme Court of Appeals consistently placed the burden of proof squarely on the shoulders of the plaintiff. In 1916, the court ruled that "in order to charge a railway company with damages for killing stock straying upon its tracks, negligence on the part of the company must appear, and the burden of showing it rests upon the plaintiff."

Nor was it necessary in West Virginia for the railroads to fence their right of way to prevent livestock from straying onto the tracks, unless required to do so by the terms of its charter, or by statutory enactment. While the railroads were bound to take "ordinary" precautions to avoid injury to trespassing animals, they were not required to maintain such a "rigid observation" as to "discover" livestock on the track. The logical progression of this reasoning culminated in 1919 when the state enacted legislation "making it unlawful for horses, cattle, etc., to run at large on a railroad right of way, and fixing a penalty on the owner if injury to property results therefrom."

Steam-powered locomotives were notorious for showering the countryside with sparks from their boilers, and hot coals often fell out of their cinderboxes setting fire to field and forest. Ambiguities in the Virginia law were settled in the favor of farmers by the Featherstone Act of 1908, which was held to be constitutional in 1917, and interpreted to mean that a railroad was liable for damages from fires occasioned by sparks or coals
beyond the railroad's right of way onto the plaintiff's property. The constitutionality of the Act was reaffirmed in 1932 when the Virginia court ruled that a railroad was liable for damages resulting from "fire caused by sparks from locomotives, regardless of whether it was negligent."41

In dramatic contrast, West Virginia law on the question of fire liability evolved in precisely the opposite direction, toward protecting the railroads from suits brought by farmers. The West Virginia Supreme Court ruled in 1911, for example, that "in absence of its negligence, a railroad company is not liable for injury to property contiguous to its line from fire starting from sparks from its locomotive." The railroad was, however, required to take ordinary precautions to prevent property damage, such as equipping locomotives with spark arresters.42

Case law built up during the industrial transformation, therefore, rendered it increasingly difficult for West Virginia's agrarians to protect themselves against railroad abuses. The legal preeminence secured by the railroads in West Virginia gave a green light to large-scale investment in natural resource extraction, but flashed a danger signal to the farmers who recognized that they were confronted with a direct assault upon their traditional legal rights.

Another important reason farmers resisted railroad development was the attempt by railroads to shift the financial burden for their construction from themselves to farmers. In order to capitalize railroad construction, companies often
expected counties to tax themselves to purchase stock in the company. Such was the case in 1885 and 1886 when promoters of the Chicago, Parkersburg, and Norfolk Railway urged the leaders of Pocahontas County to schedule a public vote on the question of purchasing $50,000 of the company's stock to help finance the road's extension through the county. The proposal created considerable controversy over assuming such a debt, and the court decided not to hold a referendum when it became clear that a majority of the citizens opposed the proposal.\textsuperscript{43}

The comments of Wheeling businessman Henry B. Hubbard, who was in the Pocahontas County seat of Huntersville on business at the time, reveal the nature of the opposition to the proposed railroad. Hubbard wrote that a "more hopeless outlook" for the village could hardly be imagined, therefore "it would be natural to suppose that every man, woman and child in the county would be in favor of a railroad." But such was not the case, "as most of the solid men are reported as unfavorable to it, and to be using their influence to prevent it being built." To Hubbard and his associates, such opposition was "almost incredible." A better understanding of "the habits of this class of people, however, did much toward removing our incredulity," and caused Hubbard to wonder if, after all, "they were not wise in their opposition so far as they are individually concerned being as they are a preeminently pastoral people with no desire for the rush, strife and turmoil of trade, but perfectly satisfied with their thousand acres covered with flocks and herds, and the comforts and
influences derived from them. A tripling or quadrupling of the value of their lands would not add to their happiness nor change their occupation, but would add to the amount of their taxes without producing an extra blade of grass.″⁴⁴

Many farmers also worried that the railroads would undermine their individual economic well-being. Not only were they concerned about the destruction of fields and livestock, with the viability of legal recourse increasingly questionable, they also worried that the railroads would depress the price of livestock and feed in the local markets. Farmers understood that when the railroads came to haul away timber they would also bring in cheaper products that could undersell their own in the local markets. When the B & O Railroad surveyed a route through Monongalia County, West Virginia into Greene County, Pennsylvania, for example, many local citizens opposed the route. At public meetings they declared that railroad construction should be halted at Cumberland, "and then all the goods will be wagoned through our country, all the hogs will be fed with our corn, and all the horses with our oats. . . ."⁴⁵

Whether their resistance stemmed from changes in their traditional legal protection, higher taxes, or the threat to their dominance in local markets, West Virginia farmers responded to the same forces of change which confronted farmers generally in the United States during the late nineteenth century, and ignited farmer protests such as the Granger, Greenback, and Populist movements.⁴⁶ Agricultural unrest in West Virginia
took its regional political shading from the early period of railroad extension through the state when the railroad companies employed heavy-handed tactics to engineer the election of friendly politicians, and used sharp business practices such as charging higher rates for short hauls than for long hauls from the Midwest. Such practices made farmers in the old established farm districts of the Eastern Panhandle and the northern tier counties outright hostile to railroads, particularly toward the B & O.  

The political atmosphere had already been poisoned by acrimonious relations between farmers and the railroads, therefore, when the railroads penetrated the interior counties to transport the big timber to market. Back county farmers were much less likely to belong to organized railroad opposition than were their counterparts in the more developed counties. Back county farmers were too thinly settled, and their economy was still founded on household production and consumption. The timber industry quickly changed all that. Removal of the forest eliminated the food supply on which farmers traditionally ranged unfenced livestock, and forced farmers to abandon subsistance farming for commercial agriculture. The older developed counties, where the forests had been cleared for farming earlier in the nineteenth century, had evolved gradually into the commercial system independently of the railroad until the mid-century mark. Berkeley and Jefferson counties, for example, were 90 percent cleared in 1894, and the northern counties of Hancock,
Brooke, Ohio, Monongalia, and Harrison were 80 to 90 percent cleared for crops and pasture. Conversely, the rural mountain counties remained covered with dense forests at the beginning of the transformation. The same State Board of Agriculture data for 1894 shows that Tucker County, one of the first interior counties to be targeted for timber development, was still 55 percent covered by ancient growth. Other mountain counties remained primarily wilderness in 1894. Hardy County was only 32 percent cleared, Randolph 30 percent, Pocahontas 33 percent, Pendleton 25 percent, and only 15 percent of Webster County had been cleared. Even in Greenbrier County, one of the earliest settled mountain counties with long-established commercial ties to Virginia, 50 percent of the primeval forest remained uncut in 1894.

Prior to large-scale timbering in the back counties, self-sufficient farmers generally raised food for their own household consumption, and livestock were driven to market to generate cash for necessities the household could not produce. Organized for household consumption, the backcountry agricultural economy was unable to supply the railroad and lumber camps with sufficient food for the workmen. Local newspaper editor John E. Campbell of Huntersville, Pocahontas County, outlined the nature of the back county agricultural system when he testily responded to complaints from "the railroad people" that they were forced "to import nearly everything they need in the way of supplies," and the "half contemptuous remark by a stranger that the county was
hardly self-supporting." This assertion was unwarranted, Campbell snapped, "for while we may not be able to sell the contractors all the farm products they need, still a great many of our people have a surplus in the bank at the end of a year's work. On the farm the market ruled, and for most of the products the only market was the home market, the long haul in wagons precluding any competition with or from the markets of the world. . . . Farm products have invariably commanded a higher price here than at the depot."51 A local sage summed up the difference between the commercial system found in the low lands of eastern Virginia, and the self-sufficient system practiced in the mountains of West Virginia: "there they eat what they can't sell, and here they sell what they can't eat."52

Although farm commodities were produced for local consumption in the mountains, livestock was the backbone of West Virginia's agricultural economy. Prior to the arrival of railroads, mountain farmers drove their stock to regional gathering points once or twice a year where large herds were purchased and driven to distant markets by professional drivers.53 Railroads changed this regional pattern, and precipitated a shift to modern commercial stock farming. Stockmen of Pocahontas Country who formerly had driven their cattle over the mountain to White Sulphur Springs, or to Covington, Virginia, began instead to ship their cattle, sheep, and hogs to market from local depots along the Greenbrier Division. In 1910 the railroad hauled 1,200 car loads of sheep
and cattle out of the Greenbrier Valley. But along with direct connections to urban markets came competition with cattle shipped from other regions to those same markets, and the competition dictated that mountain stockmen adopt more efficient methods. The rugged open-range cattle capable of withstanding the rigors of feeding for themselves under the old open-range system, therefore, were soon replaced with improved breeds that brought a higher price on the hoof. The investment into better quality herds, and removal of the forest lands where mountain livestock traditionally grazed, precipitated the replacement of open-range grazing with the enclosed pasture. Fenced pastures allowed for controlled feeding, and most significantly under the commercial system, enhanced the potential financial return on the farmers' investment.

Throughout the mountains the timber industry first generated an industrial economy, which, once the forests were removed, was succeeded by a shift to the modern commercial system. Data from the U. S. Census of Agriculture comparing the pre-timber boom year 1870 with peak-timber boom 1910 clearly demonstrates the correlation between the demise of the forest and the ascent of commercial stock raising (see Table 2). In Tucker County the number of cattle and sheep nearly tripled, and swine doubled between 1870 and 1910. Similarly, in Randolph County during these same years, the number of cattle and swine more than doubled, and the number of sheep just about tripled. Expansion in Pocahontas County livestock during this period was almost
identical, the number of cattle and swine doubled, while sheep nearly quadrupled. Even though agricultural prices declined during the long depression which engulfed American agriculture in the late nineteenth century, the value of all domestic animals (cattle, horses, mules, asses and burros, swine, sheep, goats) raised in these timbered mountain counties also expanded dramatically between 1870 and 1910: more than 200 percent in Tucker, nearly 300 percent in Randolph, and close to 250 percent in Pocahontas.

Table 2 LIVESTOCK ON FARMS IN THREE TIMBERED COUNTIES

<table>
<thead>
<tr>
<th>Year</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Swine</th>
<th>$ Total Valuation of All Domestic Livestock</th>
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</table>

Randolph County

<table>
<thead>
<tr>
<th>Year</th>
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<th>Sheep</th>
<th>Swine</th>
<th>$ Total Valuation of All Domestic Livestock</th>
</tr>
</thead>
<tbody>
<tr>
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<td>8,523</td>
<td>2,834</td>
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<td>14,657</td>
<td>12,403</td>
<td>9,458</td>
<td>474,241</td>
</tr>
<tr>
<td>1890</td>
<td>11,894</td>
<td>17,992</td>
<td>2,347</td>
<td>533,310</td>
</tr>
<tr>
<td>1900</td>
<td>18,191</td>
<td>23,570</td>
<td>7,023</td>
<td>769,775</td>
</tr>
<tr>
<td>1910</td>
<td>17,200</td>
<td>24,662</td>
<td>5,487</td>
<td>984,134</td>
</tr>
<tr>
<td>1920</td>
<td>14,684</td>
<td>18,214</td>
<td>5,128</td>
<td>1,502,266</td>
</tr>
</tbody>
</table>

Pocahontas County

<table>
<thead>
<tr>
<th>Year</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Swine</th>
<th>$ Total Valuation of All Domestic Livestock</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>7,916</td>
<td>10,824</td>
<td>2,789</td>
<td>358,239</td>
</tr>
<tr>
<td>1880</td>
<td>9,043</td>
<td>14,707</td>
<td>5,313</td>
<td>294,718</td>
</tr>
<tr>
<td>1890</td>
<td>11,894</td>
<td>25,146</td>
<td>4,684</td>
<td>444,860</td>
</tr>
<tr>
<td>1900</td>
<td>12,063</td>
<td>33,062</td>
<td>6,324</td>
<td>598,992</td>
</tr>
<tr>
<td>1910</td>
<td>13,208</td>
<td>41,517</td>
<td>5,408</td>
<td>859,923</td>
</tr>
<tr>
<td>1920</td>
<td>13,272</td>
<td>35,110</td>
<td>8,437</td>
<td>1,474,026</td>
</tr>
</tbody>
</table>
Another clear indication of the shift from subsistence to commercial agricultural is evidenced by the increasing reliance on fertilizers. Without transportation, remote rural farmers were unable to utilize bulky commercial fertilizers even if they could afford them. But the trains that hauled out the timber returned with commercial grade fertilizer, resulting in a dramatic increase in the total value of fertilizers purchased by farmers in these three mountain counties. Farmers used very little commercial fertilizer of any kind in 1879, but by 1919 the value of fertilizers utilized in Tucker increased more than thirty-two times, in Randolph more than fifty-six times, and in Pocahontas forty-six times.58

One consequence of deforestation was an increase in the number of farms in the interior mountain counties (see Table 3). Some of this increase is accounted for by the continuous subdivision of farms under the practice of partible inheritance so common in Appalachia. The answer is much more complex than that, however. The population growth which accompanied the timber boom partially explains the growth in the number of farms during this period. Woodsmen typically were from a farming background, and when the boom was over many of those who had saved enough money purchased their own land. Moreover, under the old system of open-range grazing and forest fallowing, fields declining in fertility were revitalized by allowing them to
revert to forest cover. Farmers required much greater acreage under this system because two-thirds of the land was always under or reverting to forest cover, and therefore was unavailable for agricultural use. Many farmers reduced their total acreage by selling their woodlands and then using the money to shift over to the fenced-pasture commercial system.\textsuperscript{59}

<table>
<thead>
<tr>
<th>Year</th>
<th>Total County Farms</th>
<th>Average Farm Acreage County</th>
<th>Average Farm Acreage State</th>
<th>$ Commercial Fertilizers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>223</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1880</td>
<td>385</td>
<td>223</td>
<td>-</td>
<td>456</td>
</tr>
<tr>
<td>1890</td>
<td>659</td>
<td>129</td>
<td>142</td>
<td>393</td>
</tr>
<tr>
<td>1900</td>
<td>768</td>
<td>122</td>
<td>114.7</td>
<td>1,130</td>
</tr>
<tr>
<td>1910</td>
<td>828</td>
<td>112.7</td>
<td>103.7</td>
<td>3,559</td>
</tr>
<tr>
<td>1920</td>
<td>724</td>
<td>124.5</td>
<td>109.6</td>
<td>14,726</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Total County Farms</th>
<th>Average Farm Acreage County</th>
<th>Average Farm Acreage State</th>
<th>$ Commercial Fertilizers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>575</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1880</td>
<td>1,186</td>
<td>360</td>
<td>-</td>
<td>910</td>
</tr>
<tr>
<td>1890</td>
<td>1,358</td>
<td>332</td>
<td>142</td>
<td>3,460</td>
</tr>
<tr>
<td>1900</td>
<td>1,787</td>
<td>202.8</td>
<td>114.7</td>
<td>9,670</td>
</tr>
<tr>
<td>1910</td>
<td>1,856</td>
<td>155.8</td>
<td>103.7</td>
<td>18,068</td>
</tr>
<tr>
<td>1920</td>
<td>1,774</td>
<td>170.4</td>
<td>109.6</td>
<td>51,558</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Total County Farms</th>
<th>Average Farm Acreage County</th>
<th>Average Farm Acreage State</th>
<th>$ Commercial Fertilizers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>604</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1880</td>
<td>682</td>
<td>451</td>
<td>-</td>
<td>679</td>
</tr>
<tr>
<td>1890</td>
<td>908</td>
<td>351</td>
<td>142</td>
<td>1,513</td>
</tr>
<tr>
<td>1900</td>
<td>1,051</td>
<td>241.5</td>
<td>114.7</td>
<td>5,070</td>
</tr>
<tr>
<td>1910</td>
<td>1,198</td>
<td>195.2</td>
<td>103.7</td>
<td>9,507</td>
</tr>
<tr>
<td>1920</td>
<td>1,283</td>
<td>207.6</td>
<td>109.6</td>
<td>31,292</td>
</tr>
</tbody>
</table>

Source: U. S. Census of Agriculture.

Note: Valuation of commercial fertilizers was reported in the decennial census, but for the years 1879, 1889, 1899, 1909, 1919.
The explanation for the decrease in farm size also is much more complex than simply the other side of a Malthusian trap in which population growth put pressure on a fixed quantity of land. While partible inheritance subdivided the land into smaller plots, large blocks of land also were subdivided into small units for sale by the timber companies. Lumber operators usually purchased their properties for the timber, and once the forest was removed preferred to sell the denuded land. The State Department of Agriculture actually established a program to assist lumbermen in sub-dividing their cut-over lands for sale as small farms.  

Most companies sold their properties and moved on, but others consolidated cut-over lands into huge holdings which were therefore unavailable for agriculture. The West Virginia Commissioner of Agriculture reported in 1920 that "several million acres" of cut-over land was suitable for agriculture, particularly for raising livestock and poultry, or gardening. Much of this land, however, was held by timber companies in large tracts ranging from 2,000 to 60,000 acres. The commissioner reported that "no organized or systematic use" was being made of these lands for any purpose, except summer ranging of livestock. (cite same as above para) West Virginia Pulp and Paper Company (WESTVACO), for example, accumulated hundreds of thousands of acres to insure a steady supply of pulpwood for their large paper mill in Covington, Virginia. The Federal government also purchased hundreds of thousands of acres of
barren land for the Monongahela National Forest, and the State of West Virginia acquired additional tens of thousands of acres for its extensive system of parks and forests. These too were lands withdrawn from the agricultural land market. Constricting the availability of good farm land even further, especially the all-important bottom land, was more and more prime acreage being taken over for use by railroads, mines, factories, and towns as the industrialization of West Virginia progressed.61

The population to farm squeeze was further aggravated by the environmental disaster inflicted on the land by deforestation. This disaster was well understood by conservationists even as it evolved, but their alarm was drowned out by the clamor for industrial development. The old forest was mature with a fully developed canopy, and when the tops of the giant trees were cut away the dry slashing, which was left on the floor to rot, became a virtual tinderbox awaiting the careless spark. With all the heavy steam equipment in the forest, such as locomotives, steam skidders, and steam loaders, sparks were ever present to ignite the inevitable conflagration. Fire followed fire until many areas of the state were forever altered from their original state in nature.62

The extent of the damage caused by these fires is staggering. In 1908, for example, the number of fires reached 710, burning an area of 1,703,850 acres, representing more than one-tenth of the entire surface of the state, one-fifth of its forested area, and 3 percent of the state's standing timber.
Seventy-one percent were caused by locomotives, and 20 percent were started by saw mills and campers, dramatically underscoring the destructive role of steam locomotives in the process of deforestation. Most forest fires originated with the production process. In July 1930, for example, fire broke out in a big slashing of the Cherry River Lumber Company in the Tea Creek district of the Williams River, and in a week's time burned over an area seven miles long and three miles wide. "So intense was the heat that . . . everything above ground [was] consumed and in places the loamy soil itself burned down to the rock," a local newspaper reported. Destruction of the deep humus which had built up on the forest floor for thousands of years reduced countless acres of land to bare rock in the higher elevations of the interior counties.

People who lived downstream from where the forests had been removed, particularly farmers, were seriously affected by deforestation. When the higher elevations of the interior counties were denuded, erosion further disfigured the land. Rain washed away the already thin layer of topsoil, gullies formed in sandy soils, clay surfaces washed away in sheets, and leached fertility out of the soil. What washed off the hillsides went into the streams, and farmers' organizations publicly lamented the serious pollution of the state's waters. The trouble began at the tops of the mountains, A. B. Brooks wrote, "where the cutting of the timber has bared the ground, caused the drying up of springs once pure and perennial, and substituted surface
drainage over the hard and packed soil." Lower down, the water picked up drainage from tanneries, pulp mills, saw mills, factories, coal mines, and towns and became intolerably polluted.67

Governor William M. O. Dawson established the West Virginia Natural Resource Commission in October 1908 to investigate the condition of the state's natural resources. The Commission's report was alarming. Cattle, it claimed, died from drinking the waters of the Cheat River, once synonymous with purity. Nearby Decker's Creek contained not a living thing, and was cited as another "example of what deforestation and pollution have done." Brooks confirmed these findings in 1911, reporting that steamboats on the Monongahela River "could not use the water from some of the pools without ruining their boilers." Water in the Cheat River was even worse for "it put locomotives out of commission" and "took the hair off the legs of cattle that stood in it in fly time, and was fatal when they drank it." According to Brooks, "scarcely a living fish remains in Cheat River between its forks and its mouth." These were not isolated conditions, he reported, for they were more or less replicated throughout the state.68

From the highest to the lowest elevations, therefore, cutting the virgin forest was not simply a process of chopping down large trees. It involved the virtual elimination of entire ecological systems, the consequences of which were profound for both the social as well as the natural worlds, and range far
beyond the links in that chain taken up in the short space of this essay.

By 1920 even the most strident promoters of West Virginia's industrialization had ample reason to contemplate the consequences of the transformation. Railroads had laid the iron rails of progress into the most isolated interior reaches of the state; the courts had revolutionized the law to sanction industrialization and mowed down the judicial status quo which had protected farmers; and a great flock of wage-earners who had settled in the multitude of new mill towns sawed their way through a mountain wilderness the scale of which few Americans of 1920 could even imagine. Most importantly for indigenous farmers, the self-sufficient agriculture of the ancestral "plain folk" was pushed aside by a modern commercial system which tied the fortunes of the West Virginia backcountry to the national markets. Initially this seemed reason for optimism among interior farmers. However, they would now have to compete with producers with far fewer geographic disadvantages than mountain farmers. In the twenties the question remained open whether or not West Virginia farmers could compete in the new national markets. It soon became apparent, however, that the system that was to "help our people out of the woods" would not do so by creating a competitive agricultural system, but rather by forcing them to abandon the countryside for a new life in the industrial towns inside and outside the state.
NOTES


11. Williams, *Captains of Industry*, 168; James Morton Callahan, *Semi-Centennial History of West Virginia* (Charleston, WV: Semi-Centennial Commission of West Virginia, 1913), 306-07; "Map of West Virginia Showing Railroads," West Virginia Geological and Economic Survey, 1917, MC 1, DWR 5, West Virginia and Regional History Collection, West Virginia University. This map is oversized and relatively inaccessible, but a readily available adaptation may be found in Clarkson, *Tumult on the Mountains*, insert.


16. Decennial Census of the United States (hereafter *U. S. Census*), *U. S. Census of Manufactures*. These data are dated 1879 and 1919, but accompany the Decennial Census.


21. In 1910 the foreign immigrant population was 16.1 percent in Tucker County, 7.9 percent in Randolph County, and 5.5
percent in Pocahontas County. (U. S. Census of Population, 1910.)


23. Callahan, *Semi-Centennial History*, 212. The dramatic increase in the variety and volume of manufactured goods which became available in areas previously isolated from the national marketplace is graphically revealed in advertisements placed in local newspapers of the region.

24. There were many newspaper editors in West Virginia who followed a "booster" editorial policy toward industry in addition to the Wheeling newspapers cited in this study. For example, the role of the *Logan Banner* is assessed in Altina L. Waller, *Feud: Hatfields, McCoys, and Social Change in Appalachia, 1860-1900* (Chapel Hill, NC: The University of North Carolina Press, 1988), 144-46; the position of the *Pocahontas Times* is discussed in John Hennen, "Benign Betrayal: Capitalist Intervention in Pocahontas County, West Virginia, 1890-1910," *West Virginia History* 50(1991), 54-60.


27. Callahan, Semi-Centennial History, 192.

28. Ibid., 121 note.

29. Quoted in Callahan, Semi-Centennial History, 111 note.


32. Ibid., 252-53.

33. Ibid., 253-54, 270-72.


43. McNeel, The Durbin Route, 2-3.

44. Quoted in ibid., 2-3.

45. Callahan, Semi-Centennial History, 111 note.


in West Virginia, 1873-1914" (Unpublished PhD dissertation, West Virginia University, 1946), 241-64.


50. Ibid.

51. *The Pocahontas Times*, August 19, 1899. Subsistence agriculture and production for household or local market consumption, a system found throughout America in the eighteenth and nineteenth centuries, often is misunderstood as the product of presumably "backward" or "maladaptive" people who settled in Appalachia. For an excellent corrective, see Mary Beth Pudup, "The Limits of Subsistence: Agriculture and Industry in Central Appalachia," *Agricultural History* 64(Winter 1990), 61-89.


54. McNeel, The Durbin Route, 35-37; Rice, Greenbrier County, 348.

55. For examples of this transition at the local level, see Jo Ann Sereno Teets, From This Green Glade: A History of Terra Alta, West Virginia (Terra Alta, WV: By the Author, 1978), 69-70; Rice, Greenbrier County, 389-90. For a contemporary novel depicting professional cattle drivers in West Virginia, see Melville Davisson Post, Dwellers in the Hills (New York: G. P. Putnam's Sons, 1901).

56. U. S. Census of Agriculture, respective years.

57. Ibid; West Virginia Department of Agriculture Biennial Reports. For the agricultural depression confronting West Virginia farmers (as elsewhere in the U. S.), see Barns, The West Virginia State Grange, 21-23.

58. U. S. Census of Agriculture, respective years.


61. WESTVACO owns over 300,000 acres of land in West Virginia. Total acreage of public park and forest lands in the state are divided as follows: federally administered land totals 1,161,642 acres; state administered land totals 407,247 acres; locally administered land totals 21,327 acres. This amounts to 1,590,216 acres, approximately 10 percent of the land mass in West Virginia. (Governor's Office of Community and Industrial Development, Community Development Division, *West Virginia State Comprehensive Outdoor Recreation Plan* (February 1989), 1-2.)

63. A. B. Brooks, *Report of the West Virginia Conservation Commission*, 1908, 23. By comparison, fifty-four forest fires were reported in West Virginia in 1888. (Sargent, *Forests of the United States*, 492.)

64. *The Pocahontas Times*, July 17, 1930. West Virginia's Poet Laureate, Louise McNeill Pease, who grew up in Pocahontas County during these years, writes of the smoke from this fire in her autobiographical work *The Milk-Weed Ladies* (Pittsburgh, PA: University of Pittsburgh Press, 1988), 99.


