Unattainable Edens: James J Hill, the Great Northern Railway and changing notions of agricultural expertise

Claire Margaret Strom
Iowa State University

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Unattainable Edens: 
James J. Hill, the Great Northern Railway, and 
changing notions of agricultural expertise

by

Claire Margaret Strom

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in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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This is to certify that the Doctoral dissertation of
Claire Margaret Strom
has met the dissertation requirements of Iowa State University

Signature was redacted for privacy.

Co-major Professor

Signature was redacted for privacy.

Co-major Professor

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For the Major Program

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INTRODUCTION

Alice opened the door and found that it led into a small passage, not much larger than a rat hole: she knelt down and looked along the passage into the loveliest garden you ever saw. How she longed to get out of that dark hall, and wander about among those beds of bright flowers and those cool fountains, but she could not even get her head through the doorway.¹

The story of the Great Northern Railway and its president, James J. Hill, is inextricably linked to social and cultural upheaval at the turn of the century. The Great Northern spanned a vast territory from St. Paul to Seattle, and Hill believed that the land needed to be densely settled and agrarian to profit his corporation and to save the nation from the ills of industrialization. Like Alice, Hill dreamed of an Eden and, like her, his vision was confined—not by the walls of a passage—but by the needs of his railroad. Unlike Alice, however, Hill had no magic to help him reach his garden.

In his struggle, Hill and his railroad became embroiled in issues of agricultural development. This involvement propelled him and his associates headlong into debates about methods of education and definitions of expertise which, in turn, reflected a culture in flux and a society wrestling to determine the nation's future. Constantly stymied by forces which he only partly understood, Hill's aim never faltered.

Confining our vision by the needs of the Great Northern we can gain a unique perspective on one of America's most significant cultural transitions, the move to a rationally motivated, centralized, consumer society, ushered in by the Progressives. But, unlike Hill, our line of sight is not confined to the railroad. By expanding our field of vision, the agricultural struggles of the Great Northern offer us broader insights into, and clearer explanations for, Hill's failure to create an agrarian wonderland.

Hill's interest in agriculture was inextricably linked to the nature of western railroads. Shortly after the Mexican War, Americans recognized the need for transcontinental lines. Only railways could unify their newly expanded nation, created by purchase, war, and conquest. They also recognized the inherent problems in building these lines. Railroad construction in the settled South and East had been financed by haulage. A company would connect two towns and the revenue generated by travel between them would float the line's extension to the next population center. Municipalities sometimes provided cash incentives to run the road to certain towns, but these had little effect on the basic financial structure. The unsettled nature of the West made this financial strategy inapplicable. Few towns existed, potential for haulage was small, and distances prohibitive.²

Thus, despite the political necessity of linking the nation's coasts it appeared economically unfeasible. Laying tracks across the Great Plains and Rocky Mountains, with no hope of business-generated revenue until reaching the Pacific, required an unimaginable reserve of money. As early as 1845 Asa Whitney proposed that the federal government subsidize transcontinental lines. By the 1850s most national politicians, led by Jefferson Davis, acknowledged the necessity of government support. However, a cash-poor government was not in the position to offer monetary incentives to railroad builders. Instead it offered land which, since the Louisiana Purchase of 1803, it had held in abundance.³

Early efforts of the federal government to subsidize railroads through land grants faltered due to sectional conflict. In 1850 midwestern states received public domain with a mandate to sell the land and use profits to subsidize construction of the Illinois Central. The all-encompassing sectional strife of the 1850s, including South and North fighting for the first transcontinental road, delayed further allocation of land and construction of railroads. In 1862, freed from sectional

congressional conflict by the Civil War, Lincoln approved the first grant of land for transcontinental railroad construction to the Union Pacific.\(^4\)

Land subsidies resulted in transcontinental lines gaining tremendous power in the Plains and Far West. Federal land grants, designed to prevent the acquisition of huge, uninterrupted acreages, offered alternating sections of land on either side of the tracks. Additionally, state governments courted railroads with land, resulting in vast, often untraceable, holdings. Frequently consolidating their grants, the railway corporations utilized their landed wealth and transportation dominance to spur migration, determine town sites, control local and state politics, and direct economic development.

Many Americans opposed this federal allocation of land to large corporations as it represented a distinct break with traditionally accepted land policies. The role of the public domain had been debated since its creation in 1781. Vaguely defined as the possession of all citizens, the land was seen variously as a source of federal income, an opportunity for individual profit through speculation, and a solution to the "Indian problem." However, until the advent of the conservation movement at the end of the nineteenth century and, with it, the concept that the government should administer the public domain in perpetuity for the benefit of the populace, few questioned that the fundamental federal land policy hinged on distribution and settlement. Rather, the ideological debate, raging since the Land Ordinance of 1785, centered on whether the federal government was entitled to make a profit from land sales or should just administer land transferal to individuals. In 1862, with the Homestead Act, the government finally assumed the mantle of altruistic guardianship.\(^5\)

From 1781 on, therefore, Americans generally viewed the public domain as being held in trust for future generations of Jeffersonian yeomen. They


rarely questioned the ultimate destiny of the land, arguing instead about methods of distribution and cost. Thus, the innovation of railroad land grants, met with considerable resistance. Despite frequent use of the public domain to benefit large corporations, starting with the sale of one million acres to the Ohio Company in 1787, the federal government had never given land to a private corporation until the railroad grants of the nineteenth century. Public dissatisfaction grew, especially in light of farmer opposition to railroad monopolies. In 1871, the Texas and Pacific Act ended federal land grants to railways.6

As with all companies, the early transcontinental railroads aimed primarily to make profits for their shareholders. They only differed from eastern lines in their methods of producing revenue. With little to haul in the unsettled Great Plains and mountain states, the railroads could not depend on freight. The vast land grants—the Northern Pacific received an area the size of New England in 1870—required considerable effort to convert into cash, and so the lines initially adopted other tactics. They generated income and profit through over-subscription of stock, creating dummy corporations to siphon off money, and through cutting corners in the construction of the lines. These methods proved very successful and made several large fortunes in the first phase of transcontinental railroad construction. The boom ended in 1873 with the failure of Jay Cooke’s banking house, resulting directly from an over-issuance of stock for the Northern Pacific Railway, and the subsequent national financial depression.7

After 1873, surviving transcontinental lines had to rethink operations. Those with land grants, like the Northern Pacific, focused on selling their land. Railroads founded after 1871, received no public domain and needed to find new and different methods of generating revenue.

Inheritor of these complexities of western transportation was a young Canadian, James Jerome Hill. Born in Ontario in 1838, Hill moved to the United States in 1856. After drifting around the East for a few months, he

settled in St. Paul, Minnesota Territory. St. Paul, a small entrepot on the Mississippi River, supplied army posts in the region and carted furs to market. Arriving in this growing center, Hill started work as a shipping clerk on the Mississippi levee. He accumulated knowledge and capital which he used to invest in a variety of enterprises from coal shipments to the fur trade.  

By 1878 Hill had made a considerable fortune and was positioned to benefit from the bankruptcies resulting from the crash. That year he purchased the St. Paul & Pacific, which had land grants in Minnesota and stretching west into eastern North Dakota. But when he reorganized the line as the Great Northern Railway in 1889 and pushed westward across the Plains, the line received no additional government land.

Bankers, wary of investing money in transportation ventures that had proven so capital intensive, required proof that the Great Northern would pay its way. Consequently, and unlike so many of the other transcontinental lines, the Great Northern had to be a successful railroad from the start. Thus Hill built a durable line over the flattest grades and worked hard to promote commerce in both directions. The Great Northern reached Puget Sound in 1893 and remained Hill's prime focus for the rest of his life. In 1907 when he resigned as the company's first president to assume the chairmanship of the board of directors, the Great Northern had grown from 3,284 miles in 1889 to 7,050 miles. In addition, from 1901 he directed the Northern Pacific and held considerable sway over other railroads, collectively known as the Hill Lines. Retiring in 1912, he maintained active involvement in the lines, working regularly in his office until a month before his death in 1916.

Like the older eastern lines, the Great Northern relied on freight to generate much of its revenue. In the East this strategy had largely relied on extant industries. Lacking these, Hill and his line had to adopt more

diverse tactics. Given the geographical location of the railroad, Hill assumed that its territory would be mainly agricultural. The Great Northern, therefore, developed a program to settle the land and promote types of agriculture which would result in maximum railroad use. The marginal quality of much of the land in the northern tier exacerbated this challenge, with the environment shaping, and often contesting, the direction of development.

Thus Hill's interest in agriculture related directly to profit for his line, a fact he never hid: "I know that in the first instance my great interest in the agricultural growth of the Northwest was purely selfish. If the farmer was not prosperous, we were poor." This symbiotic relationship embroiled him in agricultural development and education throughout his career.\(^{10}\)

Hill tried many different tactics to convince the farmers of what he saw as the most effective methods of agriculture. Working both by himself and through the railroad, he financed research and demonstration programs, affiliated his energies with other organizations which he perceived as moving in the right direction, and lobbied for appropriate action on the part of state and federal governments.

Part of his approach to the intricacies of educating farmers involved the creation of a variety of personal images. In doing this, he consciously distanced himself from the usual portrayal of agricultural educators. He wanted to avoid appearing as a patronizing conveyor of elitist knowledge and, instead, sidled up to farmers as a peer rather than a superior.

In modern-day business parlance, Hill developed a brand to market his agricultural product; he created the persona of "Jim Hill." Nobody referred to Hill directly as "Jim," not even in his personal correspondence, and yet the brand became well established. Historians implicitly attest to the success of the brand by unquestioningly accepting the persona, using "Jim Hill" and talking about his success as an agrarian expert.

The components of the brand were complex and interlocking. Hill needed to present himself as sympathetic to his identified audience, which

\(^{10}\) Martin, James J. Hill, 301.
he did by stressing his background as a western pioneer and current status as a farmer. His farming experience also gave him the reputation to talk knowledgeably about his product. He solidified his authority by stressing his business success and the links between the railroad and agriculture.\(^\text{11}\)

Hill's decision to promote farming as a mainstay of his railroad propelled him into late-nineteenth-century debates as varied as the problems facing rural America, the role of the federal government in western development, and the nature of expertise.

The rapid industrialization and urbanization of America precipitated a cultural crisis in the late nineteenth century. Relieved of the distractions of the Civil War and Reconstruction, Americans focused their attention on the causes of the moral decay evident in their cities. They discovered a nation that had moved far from the agrarian vision of the founding fathers toward a decadence approximating that of the Old World. The solution was seen, almost universally, to lie in a return to older, rural values; a shoring-up of modern America through strengthening its democratic foundation: the Jeffersonian yeoman. Although all agreed on the aim, the means provided occasion for considerable debate.\(^\text{12}\)

This crisis spawned a number of reform movements. From the rural radicalism of the Populists to the patronizing moderation of the Country Life Movement, these culminated in the early twentieth century with the birth of Progressivism. Each group sought to preserve the ideals seen as embodied in the American farmer and farming life. Their methods, however, varied considerably from the Populist conception of a paternalistic


government to the Country Life Movement's proposal of improving the standards of rural living.

The transition over time from grassroots-farmer movements through middle-class reformer groups to organized political change on a state and federal level, mirrored a change in the conceptualization of the problems facing America. Increasingly, reformers focused on the redemption of America through cleansing the cities not through reinforcing rural life. The nation finally adopted a Progressive rather than reactionary response, finding ways to revitalize democracy which incorporated the structural changes brought about by industrialization and urbanization. Despite this, for a period of about twenty years, the problems of rural America moved to center stage, and in their solution was seen the salvation of the nation.¹³

The continued flight of rural dwellers to the cities embodied the paradox facing those concerned with urban decadence. Farmers and reformers alike, wanted to maintain a rural population in order to uphold a Jeffersonian base of yeomen. They firmly believed that this would sustain vital democratic traditions and provide an uplifting example for urban America. Thus the reformers, such as the Country Life commissioners, aimed to improve the life on the family farm, economically, socially, and materially, thereby making it more attractive and stable.¹⁴

The debate that ensued raised the question of who could legitimately prescribe for rural America. Americans, like Hill himself, had traditionally viewed agriculture as, "the natural and most desirable occupation for man." As such, the concept of expertise in agriculture presented an anomaly. However, the societal definition of "farmer" proved far from monolithic and inflexible. Although still seen in terms of moral virtues, the occupational diversification created by the industrial revolution encouraged a growing conception of agriculture as a profession and not solely a set of character traits. This self-conscious sense of unity and distinctiveness among farmers, led to a proliferation of farm

organizations. These movements, in turn, dovetailed with a growing professional consciousness in America which resulted in people defining themselves by occupation rather than location.\(^15\)

Traditional cultural assumptions about farming hindered this move toward the consolidation of an occupational identity. The perception of agriculture as innate and vital to humanity, together with the late-nineteenth-century trend toward specialization and expertise, resulted in a variety of groups laying claim to the title of agricultural expert. Sociologists, college professors, scientists, federal officials, businessmen, and farmers contested the nature of agricultural expertise and, by implication, the right to chart the future of American agriculture.\(^16\)

The expansion of tertiary education at the end of the nineteenth century offered the nation a standardized method of adjudicating expertise: academic credentials. The formation of societies and the establishment of educational criteria for admission to particular professions reflected increasing occupational distinction. In many areas, such as the social sciences, those outside academe resisted this standardization.

Agriculture proved most resistant to academic direction. Cultural assumptions about farming questioned the need for anything more than innate knowledge. In addition, taking farmers to universities made them subordinate to a new group. Engineers taught engineers, economists trained more economists, but scientists were to teach the farmer to farm.\(^17\)

Farmers clearly wanted to benefit from the scientific and educational advances of their day and supported the right of their profession to


academic standardization. However, they resented the attempted usurpation of their expertise by university scientists and others.

By the 1890s most people saw the universities as institutions that could identify and refine the scientific principles of agriculture and teach these to students and farmers, but little consensus was reached on the nature of these principles. Farming organizations and universities debated endlessly the content of the syllabi and the methodology of teaching. Farmers thought that the basic teaching tool should be the college farm. There, people who had proven themselves as successful farmers could research and instruct students using practical demonstration. University personnel disagreed. They believed farmers incapable of deriving farming principles and relied on expert scientists to conduct necessary research and teaching. These scientists usually abstained from teaching practical farming or its mechanics, which seemed beneath their dignity. One group of academicians went so far as to claim educating farmers as unnecessary; instead they saw their mission as training the next generation of scientific investigators. Thus collegiate agricultural education saw a growing sense of professionalism and a growing disdain for the dirt farmer, the amateur, and the dilettante. The farming community, on the other hand, saw the land grant schools, ostensibly founded for their benefit, wasting time and money on abstract, theoretical research while neglecting practical education and development.¹⁸

Thrown into this struggle through corporate necessity, Hill developed his own conception of agricultural expertise. He concurred with the Progressive belief that agriculture needed to be more scientific and businesslike, and he supported the need for experts to establish fundamental agrarian principles. At the same time, as a self-made man, he believed that expertise could be established through means other than formal education. Thus, he viewed himself as an agricultural expert because of his practical experience and business acumen.

Hill agreed with the farmers' argument that demonstration farming provided an ideal method of agricultural education. Hill saw these farms


Hill, like most farmers, believed firmly in the efficacy of demonstration farms for educational purposes, but he also partially concurred with academia's promotion of scientific expertise. He made a point of hiring university professors to run his various agricultural programs, just as he used dealers to buy his art work. Throughout his involvement in agriculture, Hill carefully sought out academics who shared his views to use as educators, lecturers, researchers, and demonstrators. These experts helped Hill expand the profitability of his railroad empire as well as build up his own private farming enterprises.

Many of these men shared a common background with Hill. From staff hired for his first farm on Lake Minnetonka in 1880 to advising his son on the choice of veterinarian for the Northcote farm in 1914, Hill frequently employed Canadians. More specifically, he hired men from Ontario. These agriculturists shared many of Hill's ideas about farming, but to assert that they subscribed to a distinctive Canadian farming style would be overstating the case. Rather, they demonstrate the subjectivity of Hill's conceptualization of agricultural expertise and his ultimate reliance on a buddy network instead of on scientific rationale.

The synchronicity of a widespread concern about the future of America, the desire to reinvigorate the family farm, and the building of the Great Northern with its need for agricultural haulage, lent Hill a philosophy to undergird business necessity. Not only did he promote agricultural development to make his line pay, but also as the salvation of the nation. Hill could not separate his agricultural ideals from railroad economics and, in the promotional work he undertook, the two intertwined...
inextricably. Hill's conception of the needs of the nation and the farm melded perfectly, although unconsciously, with the needs of his corporation. Thus, Hill's involvement in the debates over agricultural development and education embodied a unique perspective. Not fully identifying with academics, farmers, or bureaucrats, Hill's endeavors were consistently colored by their corporate origins.

The conflict over agricultural expertise was largely decided during the course of Hill's life. By 1916, university experts had clearly gained ascendancy. Farmer deference to this group had been forged sporadically and regionally, based on a wide number of variables that included personalities, location, and economics. Although some pockets of resistance remained, it was generally acknowledged that academics would dictate the future of American agriculture. In refusing to concede defeat, Hill was, by his death, an anachronism, succoring his claim to expertise with outmoded principles.
THE GREAT ADVENTURE, 1878-1893

In 1878 a forty-year-old James Jerome Hill working with three other investors—the fur trader Norman Kittson and financiers George Stephen and John S. Kennedy—purchased the bankrupt St. Paul & Pacific Railroad. This line, joining the Mississippi River with the Red River of the North, was Minnesota's oldest operating railroad. It had started operation in 1862 using the engine William Crooks which Hill, as wharf master, had met at the St. Paul dock. The purchase of this railroad, connecting a wide, flat, fertile river valley to the booming mill town of Minneapolis, necessarily embroiled Hill in issues of agricultural development.¹

At the time of purchase of the St. Paul & Pacific, Hill and his associates contracted to complete the St. Vincent Extension to the Canadian border by the end of 1878 or forfeit the line's land grants which totaled upwards of 850,000 acres. The managers of the line completed this challenge. However, they realized that land sales would not necessarily prevent the bankruptcy so common to railroads. To do this, they needed to focus on increasing haulage to and from St. Paul.²

To maximize profits obtainable through haulage in both directions, the valley had to be settled and productive. Hill approached this in two ways. He exploited the extant bonanza farming boom, huge wheat acreages producing solely for market which foreshadowed twentieth-century agribusiness. And he developed a vision of a sustainable agricultural community which he attempted to convey to the farmers and settlers using marketing and educational techniques.

The timing and location of the purchase of the St. Paul and Pacific proved auspicious. The Red River Valley in the late 1870s was a flourishing grain basket. The valley floor had been formed by the huge

². Hidy, The Great Northern Railway, 30, 16; Martin, James J. Hill, 158.
post-ice age Lake Agassiz which had increased in size as glaciers retreated northwards, finally spilling into Hudson Bay. As the lake drained it left two smaller lakes: Manitoba and Winnipeg, with the Red River emptying into the latter. The current valley extends about 325 miles north to south between Lake Traverse and Lake Winnipeg, and is 75 miles across at its widest.3

The soil is fertile, glacial till overlain with a porous mixture of clay, sand, and gravel, providing an easily drained subsoil. Flowing through the old lake bed, the river meanders over a wide flood plain, distributing its load of rich alluvium in between gravel ridges formed by the beaches of the old lake. The land was perfect for agricultural development: flat, treeless, and stoneless, awaiting only a sedentary population, transportation, and markets.4

Immigrants to the Selkirk settlement in Canada grew wheat in the valley as early as 1820, but without a large market and facilities to reach it, agrarian development stalled. Rather, the valley’s economic development centered around the fur trade as oxcarts, steamboats, and finally railroads moved pelts down the river to St. Paul. By the 1850s the Hudson’s Bay Company shipped furs out of the hinterland via St. Paul which became the second largest fur market in the United States after St. Louis. Hill entered this trade in 1860 as a young freight agent working with the well-established fur trader, Norman Kittson. Later they extended their involvement through a monopoly of steamboats on the Red River in the early 1870s.5

The dominance of furs in the economy of the Red River Valley ended dramatically in the 1870s with a financial disaster. In 1873 the

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overextended Northern Pacific Railway went into receivership, bringing down the banking empire of Jay Cooke and precipitating a national panic. James Buell Power, the general agent of the land department of the Northern Pacific, believed that the only way to salvage the line was to sell off its enormous land grant. Northern Pacific personnel had to demonstrate the fertility and potential of the land to maximize its profitability. In 1874 Power convinced George W. Cass, the railroad's president, to purchase 13,440 acres in the Red River Valley and turn it into a model wheat farm for advertising and promotion. In addition, many Northern Pacific bondholders took advantage of their right to exchange their now-worthless securities for large acreages of railroad land. Power did his best to ensure that those who obtained land, at least adjacent to the railway, had some intention of working it. Most buyers were organized speculators who pooled their resources in order to secure large acreages and hire the men necessary to farm them.6

These bonanza farms, created by financiers and speculators, had the advantage of being capital intensive. They utilized newly introduced farm machinery such as double gang plow and steam powered engines, which could only be fully profitable in an economy of scale. And the scale was enormous. Bonanza farms varied in size from one thousand to sixty-one thousand acres, with an average field size of one section. On these farms, usually run by managers, huge labor forces raised a vast crop of wheat.7

Thus Power's scheme worked. The synchronous meeting of the fertile plains of the river valley, the development of large-scale farm machinery and of new milling processes which made Minneapolis the milling capital of the nation, a high European demand for American wheat, and improved transportation, resulted in a massive land boom. Land sales in the valley skyrocketed. The capital gained refloated the Northern Pacific, construction resumed, and the line reached the West Coast in 1883.8

8. Drache, Day of the Bonanza, 4; Martin, James J. Hill, 270.
Hill's railroad profited from this land boom. In May 1879 the original four partners formed a new corporation, the St. Paul, Minneapolis & Manitoba. The St. Paul & Pacific provided the basis for this new company which also included other smaller railroads, some of which had been purchased at a foreclosure sale. The new line sold nearly 180,000 acres of the original St. Paul & Pacific land grant by mid-1879. James Hill, as general manager of the line, paid particular interest to settling the land. He sent immigration agents to Europe, targeting Scandinavia and Great Britain, and arranged for editors of foreign language newspapers to tour the valley. He was helped by Power himself who left the Northern Pacific and came to work for the St. Paul, Minneapolis & Manitoba in late 1880.\(^9\)

At the same time Hill benefited personally from bonanza farming, buying lands granted to the St. Paul & Pacific to establish his Humboldt farm. Hill first purchased land in the valley in December 1881 and building on the property began in July 1882. Hill paid $2.75 per acre, which was high compared to that paid by earlier bonanza farmers such as Oliver Dalrymple, a farm manager who also bought land for $1.40 per acre. However, by 1881 improved Red River land regularly fetched $20 to $37 per acre, while unimproved land from the Northern Pacific land grant had a list price of $7 per acre. Managers ran Hill's land using the techniques common on the huge bonanza farms but with only about three thousand acres in cultivation, considerably less than most bonanza farms.\(^10\)

The bonanza farm boom thus brought profits to Hill and the St. Paul, Minneapolis & Manitoba through land sales. In addition, Hill determined to maximize his railroad's share of the haulage of wheat to the Minneapolis mills. To do this he focused on interlacing the valley with branch lines. The Northern Pacific management viewed the Red River Valley as a temporary


source of finance through land sales, focusing on completing its transcontinental line. Hill, on the other hand, viewed the valley as vital in the developing what historian Russell Kirby calls a "city-hinterland symbiosis." The St. Paul, Minneapolis & Manitoba aimed to establish permanent economic bonds with the valley and its communities that would provide a solid foundation for further expansion. Hill succeeded in establishing branch lines throughout the valley and in maximizing haulage. By the early 1880s the valley itself generated more traffic for the road than the St. Paul-Winnipeg connection. In the crop year 1878-1879 the railroad handled just over two million bushels of wheat from the valley. In less than a decade, this increased to over thirty-seven million bushels. This rate of haulage provided the justification for the financial backing Hill received to push the railroad further west.\(^{11}\)

Despite the profits ensuing from his tactics, Hill believed that large corporate bonanza farms would not maximize traffic from the valley permanently. American railroads had traditionally produced maximum income when operating in densely settled regions. Extensive land grants and company bankruptcies testified to the problems of financing railroad construction in the sparsely settled West. Consequently, for security, most railmen wanted to create networks to mirror those in the East which often meant heavy investment in settlement promotion and town-building.

In addition, Hill believed that monocrop agriculture, as exemplified in the bonanza farms, would prove vulnerable to climatic and economic vicissitudes. This reflected his Canadian origin. In the late 1850s Ontario farmers, suffering from the wheat midge and winter desiccation of fall wheat, diversified by supplying animal products for the expanding urban market. Hill, witnessing this transition to an apparently more sustainable, profitable agricultural system, became committed to the efficacy of diversified agriculture as opposed to monocropping. Throughout

his life, Hill consistently drew his agricultural ideas from his Canadian background and from fellow Canadians.  

Hill fought against the tendency toward large, capital-intensive, single crop farms, constantly promoting the diversified, small-scale family farm. In this, he joined many contemporary agricultural experts, academic and otherwise, in America as well as Canada. Settlers, politicians, agricultural scientists, and businessmen wanted the plains states to emulate the small, diversified farms of Iowa and Wisconsin and thus, hopefully, achieve similar prosperity. Therefore, while completing the Great Northern Railway, the endeavor Hill saw as his “great adventure,” to Puget Sound in Washington State, he focused his agricultural energies on trying to establish a series of small, diversified farms in the Red River Valley.

In order to promote his vision of agriculture Hill first tried to establish himself as an agricultural expert and then devise effective means of disseminating his ideas to the farming community along his railroad. For the first, he chose to forge an identity for himself as a traditional gentleman farmer. As this tactic proved ineffective he shifted to a more indirect approach; influencing farmers through promoting and sponsoring other groups and institutions concerned with rural improvement.

The gentleman farmer was a phenomenon most associated with the agricultural revolution in England. These farmers, emerging in the early sixteenth century in southeastern England, held more land than they could personally farm and so used capital to employ labor to work the land. Sometimes they acted as foremen and sometimes they refrained from manual labor altogether. These large-scale farmers sold their surplus to growing urban markets, thus increasing the capital base of their operations. As various agricultural innovations were introduced in England during the seventeenth and eighteenth centuries, the gentleman farmer both had the money to implement them and stood to profit most from those that favored economies of scale. The gentlemen farmers had the money and time to invest


13. 23rd Annual Report of the Great Northern Railway Company, 24, JJHP.
in agricultural experimentation and the diffusion of new ideas. Thus, this class of farmers disseminated new crops such as sainfoin and turnips, bred better farm animals, and introduced technologies such as floating watermeadows.  

The gentleman farmer crossed the Atlantic, becoming established especially in the South, where capital-intensive, commercial agriculture quickly became the dominant economy. In the late eighteenth century, the concept of agricultural development dovetailed with the messages of the Enlightenment. The faith in man's reason and in his ability to observe and understand the world around him, set a good ideological stage for rich southern farmers to experiment and improve their operations. These farmers, from Thomas Jefferson to Edmund Ruffin, imported stock from Europe, tested soils and fertilizers, and experimented with different crop rotations. They also founded agricultural societies and newspapers, sponsoring private research confident that "the accumulated wisdom of American farmers would unfailingly produce definitive results in the future."  

To establish his credentials as a practical and experimental farmer, Hill followed this early lead. He established a number of farms throughout Minnesota on which he supervised breeding and cultivation experiments. Some of these farms supplied the family with supplies and acted as country estates, an important part of the gentleman farmer image. Hill also developed a network with other breeders and gentlemen farmers throughout the nation.

James J. Hill had been closely connected to farms all his life, having been born on one in Ontario. Once in Minnesota, he and his family rented a farm for a few years in the 1870s. In 1880 Hill bought his first

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farm, Hillier, on Lake Minnetonka. The next year he purchased Humboldt in the Red River Valley, and in 1883 he started acquiring land north of St. Paul which would become North Oaks.

In 1871 James and his wife, Mary, moved with their two young children from their first house on Canada and Pearl in St. Paul’s Lowertown to a cottage at the junction of Ninth and Canada streets. In 1876 the family, complete with two more children, Louis and Clara, vacated the property for two years while a new house of white brick was built. During this time the family rented a seven-acre farm on Dayton’s Bluff belonging to the Yandis family. The farm’s stone house served as their main residence during these years and saw the birth of their sixth child, Charlotte (their fifth child, Katherine, having died in 1876). The house was, according to the Hills’ daughter, Clara, fairly primitive. “It was such a home as one could have found two hundred years ago. It stood on a street and had neighbors, but water was supplied by a well, and there was no plumbing or furnace or lighting system.” In addition to serving as a residence, the farm supplied the family with all its fruit and vegetable needs as well as with dairy produce. None of the Hills actually worked on the farm. Mary Hill spent much time traveling in the East after Katherine’s death. Hill commuted daily to St. Paul by wagon with the two eldest children and “often followed by a goat.”

In 1880, two years after the completion of his new house in St. Paul, Hill purchased 160 acres on Crystal Bay, Lake Minnetonka which he named “Hillier.” In 1882 Samuel J. Wetherald, a railroad employee of Hill’s and son of his old schoolteacher, William Wetherald, wrote to Alfred Spencer of Fonthill, Ontario, asking him to run the Hillier property.

Despite his continuing claims to scientific agriculture, Hill’s hiring processes reflected use of more subjective criteria. Throughout his career in America, Hill repeatedly hired men from Ontario to help him with his agricultural endeavors. Wetherald and Spencer may have been the first. Whatever information he absorbed as an adult, he never strayed far from the

17. The property was also referred to as “Maryhill.”
farming techniques he had observed as a boy, and he consistently hired men from the same background as himself.18

Hill originally intended the property on Lake Minnetonka as “a farm and market garden.” It provided the family with produce. It functioned as a country estate which tied into the creation of an image as gentleman farmer. In Wetherald’s letters to Spencer this became clear, “He [Hill] would want to send his children out there in summer . . . would probably want pet animals, garden plants and flowerbeds.”19

More importantly, Hill wanted “some competent person near by to take charge [of the] farm . . . and raise the early vegetables, small fruits, keep a dairy,” to provision the new “magnificent” Layfayette Hotel which the St. Paul, Pacific & Manitoba was building on the lake. Hill intended that his railroad would bring the wealthy of the Twin Cities to this hotel, exploiting the position of Lake Minnetonka as a fashionable resort and setting a precedent for railroad tourism which his son, Louis, would later explore to the full with his development of Glacier National Park. The farm would allow his family to mingle with the vacationing elite.20

At Hillier, Hill first launched a traditional gentleman farmer program of experimentation. Given his concern about the monocropping in the Red River Valley and his advocacy of diversification, he naturally inclined toward stock breeding. In 1882 Hill bought two carloads of “fancy breeding cattle and sheep” from Scotland including, “5 of the Prize animals of last year in Scotland including Lord Chancellor.” At Hillier he experimented crossing Angus heifers with his new Shorthorn bulls. Ultimately he aimed at increasing the number and improving the quality of

18. Dickman, "James Jerome Hill," 177; Samuel J. Wetherald to Hill, 24 September 1882, General Correspondence, JJHP.
19. Wetherald to Alfred Spencer, 12 January and 7 February 1882, Letterpress Books, JJHP.
cattle (with a lesser emphasis on sheep and hogs) along his line, thus maximizing revenue for both the farmers and the railroad.21

Hill wanted to demonstrate the importance of quality stock. Most people interested in improving American agriculture agreed that maintaining blooded stock was more productive than raising native cattle. Unfortunately, many farmers could not afford to buy purebred cattle. Hill and other agricultural educators countered that buying purebred stock was, in fact, cheaper than raising scrubs (native, unblooded cattle) because it maximized livestock profits. Hill backed this assertion with hard figures. "An animal weighing 1600 or 1800 pounds, worth 6c a pound can be raised for less money than one weighing 1300 pounds that will sell for 41/2c per pound."22

Hill strayed from the conventional wisdom of the universities by stressing dual-purpose cattle as a supplement to grain income. He believed in the possibility of crossbreeding cattle to create an optimal strain whereby the cows would give large quantities of quality milk and the steers would yield high quality beef. This would solve the problem of the high cost of beef cattle and the vulnerability of dairy herds to the extreme cold on the northern prairies and plains.23

This emphasis on multiple-use cattle on the part of Hill was not totally eccentric. Generally, university personnel rarely advocated dual-purpose cattle, favoring instead either a dairy or a beef focus. However, the scrub cattle often kept by farmers usually provided both milk and meat, and a strong minority of agricultural experts, including some at the universities, showed interest in dual-purpose stock. This idea of diversification through dual-purpose cattle represented one of the first identifiable components of Hill's agricultural philosophy, and all his later university friends espoused it. Professor Thomas Shaw, a fellow Canadian, head of animal husbandry at the University of Minnesota, and later agricultural expert for the Great Northern and Northern Pacific, advocated dual-purpose cattle. Shaw's successor at the university, and

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22. Hill to J. F. Harkness, 26 March 1884, Letterpress Books, JJHP.
another of Hill's friends, Andrew Boss, experimented with a dual-purpose herd as late as 1930.24

Dual-purpose cattle had a pragmatic appeal. They required less time and labor than blooded stock, were cheaper, and involved less risk than launching a full-blown dairy or beef operation, and support for them continued long after Hill's death. During the Great Depression, when farmers struggled for some form of financial security and had little capital to invest, the University of Minnesota's Agricultural Experiment Station produced a bulletin evaluating the variables involved in raising beef cattle and dual-purpose cattle. The authors concluded that:

A milk-and-beef herd involves less risk than a beef herd, both because of the smaller investment and because of the production of both dairy products and cattle for sale. Less skill was used in the selection of the breeding stock and in the fattening of the cattle than in the beef herds. . . . However, they do not offer possibilities of as large profits as may be obtained with either a beef or a dairy herd. The milk-and-beef cows are not capable of producing large quantities of dairy products economically, nor of raising the highest quality beef calves."25

The central issue at stake in the debate over dual-purpose cattle really involved the promotion of two different systems of farming. Hill advocated the use of livestock in a program of diversification. Having witnessed the success of diversification in restoring agricultural productivity in Ontario, Hill argued that the forage available in Minnesota could produce a "beef and dairy yield equal in value to the entire wheat crop of the state."26

26. Hill to Andrew Nelson, Litchfield, Minn., 4 January 1884, North Oaks Papers, JJHP.
American agricultural scientists, such as Andrew Boss, supported this idea, arguing that dual-purpose stock did present the most efficient and profitable solution to farmers when seen in the context of a diversified agriculture. The proponents of dairy and beef cattle, such as Theophilus Haecker, represented early boosters for agricultural specialization. For them, a single agricultural focus was the ultimate method of maximize a farm's profit potential.

Disagreement over dual-purpose cattle represented part of a larger argument concerning the role of science in agriculture and agricultural education. In the late nineteenth century scientists professionalized, creating specific educational requirements to maintain their elite position. Farmers met this elitism with disdain, seeing agricultural research as fundamentally based in practical skills. The conflict focused on the work of the agricultural experiment stations, where opposition from farmers and politicians often stymied attempts to conduct "pure" research. The same antagonism existed among the stations' faculty, as formally uneducated farm boys reached professorial positions and clashed with trained professionals. The former tended to stress practical research and educational outreach, the latter emphasized modes of ideal production, irrespective of cost, and resented the demands of farmers on their time.27

These problems of research and education in agricultural science paralleled Hill's career, influencing many of his decisions, as he consistently sided with the old-school farmers, researchers, and teachers. Reflected in his desire to establish small-scale diversified farms and in his advocacy of practical farmer education through demonstration farms, Hill's alliance was also evident in his continual promotion of dual-purpose cattle.

Thus as a gentleman farmer, Hill tried to establish stock, bred from pure lines, where the bulls would provide quality beef and the cows a large quantity of good milk. Hill believed that improved production would make diversification more attractive to the farmer by increasing profitability. Hillier saw the birth of this program which later dominated much of the

work at the North Oaks and Northcote farms. Hillier also had sheep, with an estimated flock of forty head by the summer of 1883.28

Hillier failed to serve Hill's purpose for very long. He soon recognized that the scope of his agricultural interests could not be accommodated on 160 acres. In addition, he lost interest in hotel management. Therefore, Hill rented the hotel to Eugene Mehl in 1883 and the same year purchased North Oaks. The new farm, ten miles north of St. Paul, proved "commodious" and dramatically halted the plans for development of the Hillier farm. The livestock moved to North Oaks in September of 1883, and Hillier was rented out. Hill did not sell the farm on Lake Minnetonka until 1903 when lumber baron and friend Thomas Shevlin bought it.29

In many respects the most important of all the Hills' farms was the five thousand acres which eventually made up North Oaks. In 1883, shortly after completing the purchase of Humboldt and three years after buying Hillier, Hill purchased three thousand acres from Charles Gilfillan for $50,000. Over the next few years he bought two thousand more acres in small sections.30

North Oaks acted as a country estate. Hill kept it stocked with game birds, and the family often spent months at a time living there, especially in the summer. The land was decorated for pleasurable visits with flowers and shrubs. In 1888 the flower order included: columbine, auricula, candytuft, sweet peas, poppies, morning glories, cosmos, clematis, feverfew, forget-me-nots, gladiolas, french honeysuckle, lavender, nasturtiums, carnations, calendula, marigolds, sweet alyssum, asters, dianthus, hydrangeas and sunflowers. In addition, the farm provided the family's main residence at 240 Summit Avenue, St. Paul, with vegetables, eggs, milk, fruit and fresh flowers transported daily by cart.31

29. Hill to C. H. Burwell of Minnetonka, 2 May 1883; to Eugene Mehl, 27 July 1883; to W. T. McCollum of Howard Lake, 10 September 1883, Letterpress Books; John Dalquest to Hill, 22 January 1903, General Correspondence, JJHP.
31. Hill to John Kennedy, 23 April 1883, Letterpress Books; Order for quail, 23 February 1888, North Oaks Papers; Mary Hill diaries, 1885;
North Oaks was also an important farm in its own right. From 1883 to 1893 it operated as a stock farm and a base for Hill's search for the perfect dual-purpose cow. Hill's initial approach to this problem continued his earlier work at Hillier. He tried to develop beef cattle with good dairy qualities. Overall he favored Scottish Shorthorn and Angus beef cattle, breeding them to try and increase their milk yield. In 1885 he wrote to a fellow farmer, C. L. Van Fleet of Marshall, Minnesota, "As to milk, I have Polled Angus cows that have given me from 26 to 28 quarts a day from grass for six months at a time, and I have one family of Shorthorns . . . that gives from 20 to 25 quarts a day."^32

To start a herd with the best bloodlines available Hill imported purebred cattle from Great Britain at tremendous cost. In 1886 he shipped six Shorthorn cattle and thirty-five Polled Angus over from Liverpool. Perhaps because of his Canadian connections, he chose to bring the stock in through Canada rather than New York. The cattle spent the winter in quarantine in Quebec because of cases of pleuro-pneumonia in the herd and did not reach the farm until May 1887. The total cost was $15,667.80.^^33

Hill wanted to determine the optimum feed for maximized livestock production. Feeding experiments started in the early years at North Oaks. In 1886 Hill wrote to the editor of the Farmers Advocate and Northwestern Stockman that a combination of turnips, beets, cabbages, hay, and oilcake provided better winter feed than corn. Two years later the National Livestock Journal discussed Hill's use of root vegetables, clover, and corn as feed.^^34

This use of root crops for forage had its basis in England, as Hill acknowledged, and had come to him by way of Canada. Ontario farmers regularly grew a sizable amount of root crops for fodder, dominantly mangel wurtzels and turnips. The acreage of Ontario farmland invested in root

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1888 flower order, North Oaks Papers, JJHP; John Hasslen, interviewed by Betsy Doermann and Ellen Rosenthal, 24 November 1981, JJHH.
32. Hill to Van Fleet, 27 January 1885, Letterpress Books, JJHP.
33. Chas. Maitland to Hill, 10 February 1887; Quarantine for stock—Port of Quebec form, 17 February 1887; North Oaks Receipts, 1886-1887, North Oaks Papers, JJHP.
34. Hill to editor of Farmers Advocate and Northwestern Stockman (St. Paul), 17 May 1886, Letterpress Books; Extracts from the National Livestock Journal sent to Hill by editor, 10 September 1888, North Oaks Papers, JJHP.
crops in 1895 represented 20 percent of the land planted in wheat. In contrast, the next year, North Dakota's root crop only represented 0.02 percent of the wheat acreage. Hill ordered seed for rutabagas and turnips from Toronto, trying to grow plants which had adapted to a harsher environment.\footnote{Hill to A. M. Sherman, 7 May 1886; to editor of Farmers Advocate and Northwestern Stockman, 17 May 1886, Letterpress Books, JJHP; "Crop and Live Stock in Ontario," Ontario Bureau of Industries, Bulletin 56 (November 1895): 9-10; Fifth Biennial Report of the Commissioner of Agriculture and Labor to the Governor of North Dakota for the Two Years Ending June 30, 1898 (Bismarck: Tribune, State Printers and Binders, 1898).}

Hill's interest at this time was not just limited to cattle. The North Oaks' letterhead from 1887 listed him as an "Importer and Breeder of Short-Horn, Aberdeen-Angus and Jersey Cattle; Cleveland Bay Horses Shropshire and Highland Black-faced Sheep. Cob Ponies; Berkshire Swine." He bred purebred pigs, buying Pilot, a prize-winning Berkshire boar, from a farmer in Edmonton in December 1887, and he sold many purebred Berkshire pairs throughout this period at ten dollars per pair. In 1888 his interest turned to poultry, and he acquired some Mammoth Bronze turkeys, some Black Cochin cockerels, and some Plymouth Rock cockerels. He also had various breeds of sheep and horses.\footnote{John Snell to John Gibson, superintendent at North Oaks, 7 December 1887; Memo regarding purchase of poultry 1888, North Oaks Papers, JJHP.}

The work at North Oaks involved a huge financial turnover. In 1888 Hill's income from the farm was $30,673.66: $25,040.99 from the sale of livestock, $640.65 from the sale of meat, hides and tallow, $2,395.08 from dairy produce, $1,407.03 from fruit, vegetables, eggs, and grain, $267.48 from firewood and $922.43 from sundries. Expenses totaling $32,614.78 offset this income. Herein lay part of the reason for his failure to influence farmers through example: the majority of farmers not only lacked huge sums of money to invest in experimentation, but they could not afford any year-end loss on their operations.\footnote{North Oaks Receipts, 1887-1888, North Oaks Papers, JJHP; David Deinbom, The Resisted Revolution: Urban America and the Industrialization of Agriculture, 1900-1930 (Ames: Iowa State University Press, 1979), 88; John R. Stilgoe, "Plugging Past Reform: Small-Scale Farming Innovation and Big-Scale Farming Research," in Scientific Authority and Twentieth-Century America ed. Ronald G. Walters (Baltimore: Johns Hopkins University Press, 1997), 121-2.}
During these early years, Hill involved himself actively in the business of farming. He dealt with much of the agricultural correspondence himself. He ordered supplies, paid, or at least saw, all the farm bills, established retail arrangements, and hired staff. He also spent much time at the farm enjoying his herds. He appreciated the value of his farm for demonstration purposes, sending railroad passes to farmers to visit North Oaks. Through his work at North Oaks, Hill gained the knowledge necessary to qualify as a farmer. For this knowledge to operate as an effective educational tool, however, he needed to turn it into a reputation.  

With the purchase of good quality stock, involvement in agricultural shows, breeding and feeding experiments, and correspondence with other breeders and the agricultural press, Hill used the methods of eighteenth-century gentlemen farmers combined with modern science to established himself as an agricultural expert. North Oaks gained a reputation for quality stock among other breeders. Hill had large annual sales which were featured in all the major stock magazines. For the 1887 sale, which Hill held jointly with lumber baron Nathaniel Parker Clarke of St. Cloud, catalogs were sent to 182 people in Wisconsin, Iowa, Illinois, Dakota, Kansas, Montana, and Indiana. These farmers, already stockbreeders, had, unlike the majority of their professional peers, the financial ability to sustain their convictions.

Hill’s status as a gentleman farmer was also acknowledged through competition. From 1885 Hill entered animals in the Fat Stock Show in Chicago and consistently walked away with prizes. In 1887 “the superior quality of the stock on exhibition at Chicago,” prompted the secretary the Illinois State Board of Agriculture, Charles Mills, to suggest that the next show should be held in St. Paul. Two years later Hill won $705 at the show for his Aberdeen Angus and Shorthorns.

38. Hill to Samuel Thorne, 19 January 1883; to Col. C. A. DeGraff, Spring 1883; to N. J. Stubbs, 16 October 1884; to W. G. Trotman, 27 January 1886; to Robert Auketell, 28 May 1886; to H. W. Donaldson, 8 April 1889; to N. J. Stubbs, 13 April 1889, Letterpress Books; miscellaneous bills with notes in Hill’s hand, North Oaks Papers, JJHP.
39. Catalog mailing list, 1887, North Oaks Papers, JJHP.
40. Hill to Robert Campbell, 31 December 1885, Letterpress Books; Charles Mills to Hill, 21 November 1887, North Oaks Papers; North Oaks Receipts, 1889, North Oaks Papers, JJHP.
Hill's agricultural influence extended to other groups interested in agricultural development. An active member of the Minnesota State Agricultural Society, he donated money, built railroad tracks to the fair grounds, and regularly "delivered interesting and valuable addresses." He viewed the society and the fair as vehicles for buttressing his credentials and extending his influence over farmers. He exhibited his cattle, refusing all premiums. This started in 1886 with heifers, produced from his prize Shorthorn bull, Berkeley, Duke of Oxford II, being bred, "upon his grand broad-backed, deep ribbed Scotch show-cows." By this point, many members of the society acknowledged his expertise, and Hill received eleven votes for president of the organization in the annual election, even though he was not on the ballot.\(^4\)

Unfortunately, most of the men involved in the Minnesota State Agricultural Society had little influence with respect to agricultural change. Like Hill himself, many of them were businessmen and politicians. Some, like Clarke and Carson N. Cosgrove, maintained herds and demonstrated interest in breeding experiments emulating Hill's gentleman farmer role, while others had no agricultural connection at all.\(^2\)

As well as local businessmen, Hill did convince others of his claim to expertise, or at least of the quality of his stock, including university men. Theophilus Haecker, the professor of dairy husbandry at the University of Minnesota, recognized his breeding efforts and purchased animals from North Oaks, as did the Dakota Agricultural College. By the late 1880s, then, Hill had established a reputation as an expert among a group of rich farmers and agricultural scientists in the Midwest. He achieved this by developing his farms into model, scientifically run, diversified establishments and publicizing his accomplishments.\(^3\)

In addition, Hill worked to convince his national business peers of the applicability of his agricultural ideas, especially meat-packing mogul,


42. Hall and Holcombe, History of the Minnesota State Agricultural Society, 186, 298.

43. Theophilus Haecker to James J. Hill, 24 November 1893, General Correspondence; letter, 15 October 1887, North Oaks Papers, JJHP.
Philip Armour. He sent Armour samples of his Angus beef. Armour was duly impressed, saying "I never ate a better piece of meat in my life" and distributing more than a hundred roasts from three of Hill's cattle to people in New York, Chicago, and Milwaukee. More important in spreading his ideas throughout the railroad's territory, and harder, was to determine methods to convey his expert knowledge to the farmers, convincing them of his qualifications for expertise. Hill needed to find ways to convert his reputation into an educational tool.  

Having established himself as an expert among a farming elite who had money to attend stock shows and time to invest in the Minnesota Agricultural Society, Hill needed different tactics to reach grassroots farmers. He chose to approach them as equals. Unlike many academic experts who, "don't know enough to put a crop in the ground or to hoe a row of turnips," Hill offered practical expertise.

Thus, although he publicly supported universities, Hill aligned himself with the farmers. In speeches promoting his prime interests—diversification, crop rotation, and soil conservation—he relied on his farming experiences to establish his agricultural authority. He regularly referred to his farms, describing himself as "farming by proxy." This helped distinguish him from professors and thus avoid being implicated in attacks on effete, book-learnt, agricultural scientists.

Initially Hill approached the matter of farmer education simplistically. Following the traditions of the eighteenth-century gentlemen farmers, he believed that the example of his successes would be sufficient to convince others of the efficacy of his notions. Thus part of

44. Philip Armour to James J. Hill, 1 December 1885, General Correspondence, JJHP.
46. Record (Fargo, N.D.), September 1897; St. Paul Dispatch, 19 November 1912; Post and Record (Rochester, Minn.), 1 October 1909; Butte Evening News, 6 October 1909; Anaconda Standard, 27 October 1909; The Dakota Farmer (Aberdeen, S.D.), 1 June 1909.
his educational approach during these early years involved leading by example.

Hill encouraged farmers to visit his farm at North Oaks, in addition, he allowed the farm to be used as a practical demonstration farm for the agricultural classes at the university. In 1891 the University of Minnesota's magazine reported, "Prof. Hays recently took his class of thirty-five in animal husbandry to visit the magnificent stock farm of President J. J. Hill, north of St. Paul. It was a jolly picnic for the boys, and they appreciated the practical lessons, pointed out by the professor." Such outings seemed trivial, but they did expose farmers and farmers-to-be to Hill's up-to-date methods and techniques in a congenial and, perhaps, persuasive manner. He also spread his expertise and knowledge through letter communication with farmers. At this time, Hill answered much of his agricultural correspondence personally. This involved exchanges with other interested parties about the advantages of different breeds and the exchange and collection of a variety of seed.47

In reality, Hill often preached to the converted, and thus his impact remained highly circumscribed. Farmers who showed interest in visiting North Oaks, agricultural students at the university, and breeders exchanging information, represented a group of agriculturists already convinced of the importance of the need for a scientific, or at least quasi-scientific, approach to farming. The bulk of farmers in the region lacked the time, money, and inclination to visit a rich man's farm or to correspond with him, and continued to practice the types of agriculture which seemed most productive to them. In addition, many resented the implied allocation of blame. Hill, like other rural reformers, saw the basis of the national farming problem lying in the inefficiency of the farmer. Many farmers countered that the undervaluing of their occupation in American society at large represented the core issue.48

47. Hill to Robert Auketell, 28 May 1886, Letterpress Books, JJHP; Ariel (Minneapolis) 14, 6 (1890-91): 89; Hill to anon., 21 December 1885; to R. S. Bull, 18 June 1886; to C. C. Andrews, 22 May 1884, Letterpress Books; C. C. Andrews to Hill, 5 March 1883 and 19 April 1884, General Correspondence, JJHP.

To reach these men, at least those in the Red River Valley, Hill, through the St. Paul, Minneapolis & Manitoba railway, started drainage schemes in the valley. He aimed both to improve the railroad's lands for sale, and also to demonstrate to local farmers the advantages of improving agriculture scientifically.

The Red River Valley, on the Minnesota side, divided into three topographical regions running north to south. The two regions to the west and east had sufficient gradient and natural streams to remain well drained. The middle region, however, did not. Consequently, the farmers in this area faced the danger of early seeding being destroyed by frost, which the damp soil exacerbated. One solution was to lay tile drainage systems throughout the valley which would help channel the excess water off the land and, through drainage ditches, back into the river.49

Floods also posed a problem to railroad operation as they could wash out the tracks. To prevent this, the St. Paul, Minneapolis & Manitoba cut an aggregate of forty-five miles of ditch in Kittson, Norman, Polk, and Clay Counties in 1879 and 1880. Later, to improve the land of the St. Paul, Minneapolis & Manitoba for potential purchasers, the railroad's engineers built outlet canals connecting closed watercourses such as the Sand Hill and Wild Rice Rivers to the Red River at the cost of several thousand dollars. This drained the railroad's land but antagonized neighboring farmers, who sued the railroad for the supposed flooding of their land. According to Hill, the charges were generally unfounded as the farmers' lands "were benefitted by the better drainage facilities," but the suits "aggregated an amount of nearly $100,000, and the Company was forced to a heavy expense in defending them." In the end, many of the verdicts went against the railway.

Despite his efforts to identify himself with the farmers and establish himself as an agricultural expert, Hill's first large-scale attempt to influence farmer practice failed. Settlers in the Red River Valley did not follow the railroad's lead in drainage and, moreover, they sued the railroad for the work it undertook. The image of Hill as a

successful farmer, and thus worth emulating, had not taken hold. To lend more credence to his claims of expertise, Hill changed his agricultural policy. Drainage in the valley represented the last attempt of the railroad to improve agriculture unilaterally for at least twenty-five years. From this point on, the railroad and Hill were cautious to operate in conjunction with other organizations whether governmental, academic, or local, when promoting on-site improvements.50

This concern first became apparent in the continued issue of drainage in the Red River Valley. Hill backed out of private corporate drainage attempts, but some locals noted the good effects of the St. Paul, Minneapolis & Manitoba’s few miles of ditch, and interest in drainage grew. Hill capitalized on this interest, sponsoring a drainage convention in Crookston in 1886. At this meeting, Hill suggested that drainage projects should be funded directly from assessments of the lands which benefited. This made locals nervous, as no-one could provide an estimate of the final cost. Thus the convention decided that the first order of business was a topographical survey of the valley to determine the potential for drainage. Hill paid half the cost of this survey (five thousand dollars), and obtained the services of hydraulic engineer, Professor Fanning, to undertake the work under the direction of Charles G. Elliott a drainage engineer from Illinois. The results of the survey demonstrated the feasibility of drainage in the area, calling for 275 miles of ditch at an estimated cost of $750,000. The reconvened convention decided to push for state intervention to finance and complete the work.51

The group, under the leadership of Ezra Valentine, one of Hill’s lawyers in the valley, lobbied the state for appropriate legislation. This came in 1893 with a law to conduct drainage work in “the counties of Wilkin, Clay, Norman, Polk, Marshall, Kittson, Grant and Traverse.” The law appropriated $25,000 to be spent annually for four years on this work. In addition, it specified that no money should be paid out of the state

50. Palmer, “Swamp Land Drainage,” 64; Hill to Christopher Stevenson, 17 March 1886; to John M. Martin, 26 November 1886; to H. W. Donaldson, 19 June 1893, Letterpress Books, JJHP.
treasury for any work until the Great Northern Railway Company had deposited $6,250 toward the drainage each year.\textsuperscript{52}

Although pleased with the act, Hill was unhappy about the state appropriation of company funds as "the Great Northern Company cannot and will not allow the State to appropriate money for it to pay." He understood that the company should pay for any benefit to land it owned, but argued that the Great Northern owned no land in the valley. The federal government had granted public domain to the St. Paul & Pacific which the St. Paul, Minneapolis & Manitoba assumed on becoming the parent corporation. In September 1889 Hill formed a new company named the Great Northern Railway. The Great Northern established a 999-year lease of the St. Paul, Minneapolis & Manitoba, so that they could operate in conjunction, but they remained, legally, separate corporations. Hill finessed the potential conflict with the state by paying the money on behalf of the Manitoba company which had "a large block of land on the Sand Hill River, South of Crookston, that would be benefited by the opening of that river." The work went ahead, with Erza Valentine and N. D. Miller, the chief engineer of the Great Northern being appointed to the Board of Audit by Governor Knute Nelson.\textsuperscript{53}

By working through businesses and a group of influential local farmers wealthy enough to benefit from technological advances, and by mobilizing the power of state legislation, Hill managed to achieve successful drainage in the Red River Valley. Thus Hill learnt the value of cooperation with other institutions to implement agricultural change which, "The majority of the people [the average farmers in the valley]... did what they could to prevent."\textsuperscript{54}

Hill's attempts to educate farmers through personal or corporate example had very limited success. The farmers who displayed interest in

\textsuperscript{52} Palmer, "Swamp Land Drainage," 66-69; General Laws of Minnesota for 1893, Chapter 221, "An Act to Appropriate Moneys for the Purpose of Opening of Closed Watercourses..." 371-72.

\textsuperscript{53} Hill to Donaldson, 19 June 1893, Letterpress Books; Knute Nelson to Hill, 15 July 1893, General Correspondence, JJHP; Malone, James J. Hill, 128-29; Mercer, Railroads and Land Grant Policy, 58-59, Mercer's book gives the year of incorporation of the Great Northern as 1885, all other references give 1889, Martin, James J. Hill, 376-78; Hidy et al., The Great Northern Railway, 72-73.

\textsuperscript{54} Hill to M. S. Merager, 21 May 1889, Letterpress Books, JJHP.
his ideas were those already open to concepts of agricultural development
and who had already embarked on improving their methods. Hill’s carefully
cultivated persona as a scientific gentleman farmer influenced only those
with the money, interest, and knowledge to invest in agricultural
improvements. Hill’s attempts to reach the bulk of farmers directly
through local example resulted in lawsuits against the railroad. What he
did discover was the efficacy of promoting ideas through local
organizations and of utilizing institutional power to effect change.

Hill also tried philanthropy to reach the farmers and encourage them
to change their methods. He understood the role of money in facilitating
change and that many farmers lacked the capital necessary to purchase
quality cattle in order to maximize livestock productivity. His initial
response to this was very in keeping with the gentleman farmer image. As
early as 1883 he envisioned breeding quality animals at North Oaks for
annual distribution to farmers. He postulated that he would start small,
distributing only four bulls the first year, products from the stock
imported in 1883.55

By the summer of 1884 he realized that breeding cattle for
distributing would be time-consuming and changed his plans. He distributed
imported cattle directly, giving away 143 purebred bulls from 1884 to 1885.
Hill donated the cattle to farmers along the St. Paul, Pacific and Manitoba
railway in thirty-one counties of Minnesota and North Dakota, in order to
improve the general quality of stock throughout the area. Farmers received
bulls on condition that for four years they allowed their neighbors access
to the bulls’ services for a nominal one dollar charge (which would
hopefully cover the cost of keeping and caring for the animal). The
animals also had to be cared for according to specific guidelines and, if
sick, receive treatment from a veterinarian chosen by Hill. Thus when the
bull given to P. S. Lay fell ill in November 1885, Hill arranged for the
animal to be shipped to Grand Forks so veterinarian, Dr. Alloway, could
perform surgery.56

Hill’s generosity in this matter continued until the end of the
decade. In 1885 he distributed about a hundred bulls and had thousands of

55. Hill to Andrew Nelson, Litchfield, Minn., 1 April 1884, North
Oaks Papers, JJHP.
56. Hill to P. S. Lay, 28 November 1885, Letterpress Books, JJHP.
applications from farmers. In 1886 he expended $34,111.11 on placement of bulls, and in 1890 Hill placed Alloway, now superintendent of North Oaks, in charge of distributing two carloads of Angus and Shorthorn cattle and one carload of Berkshire pigs in North Dakota along the line west of Larrimore. To encourage interest in the cattle he distributed, Hill offered prizes at various county fairs for the best offspring of cattle distributed by him, as well as for the best grade cattle.57

Although Hill personally distributed cattle along his line from 1884 to 1890, his philanthropy proved considerably less effective than he had hoped. Farmers failed to look after the cattle properly. They either did not realize the time and effort necessary to raise quality stock or were not prepared to invest it. Farmers tried to treat quality stock the same way as they had always treated the scrub cattle maintained for home production. As historian David Danbom contends, although understanding the theoretical benefits of diversification, many farmers remained primarily grain farmers, placing the needs of wheat production above all else. Thus the livestock did not receive the attention and time necessary, and farmers did not plant sufficient acreage with forage and fodder crops. Inevitably, the cattle failed to thrive or produce profit.58

At a time of relatively high grain prices, farmers were loath to turn valuable grain land over to pasture and forage crops. In fact, vocal opposition to Hill's distribution scheme arose. Hill, talking from a perspective of nearly thirty years, summarized the attitudes of his opponents; "they said I was trying to ruin the reputation of the State;

57. Hill's official biographer, Joseph Gilpin Pyle, claims that Hill distributed nine hundred bulls between 1885 and 1886, at the cost of $150,000. Hill himself claimed in later life that the distributions for these two years approximated eight hundred bulls donated. These figures seem unreasonably high, given all the information contemporary to the distributions, and I have relied on the latter figures. Joseph Gilpin Pyle, The Life of James J. Hill Vol. I (Garden City: Doubleday, Page & Company, 1917), 367; Orange Judd Farmer (Chicago), 6 September 1890; Hill to Onsted [sic], 8 May 1885; to Gilbert Pierce, 17 October 1885; to C. D. Baker, 4 August 1886; to Knute Nelson, 30 March 1914, Letterpress Books; "Contracts" in the North Oaks Papers, JJHP.

that it was not a cattle state. It was not a livestock state; it never would be. It was the home of No. 1 hard wheat and was always going to be the home of No. 1 hard wheat. They held political conventions and condemned me.\(^{59}\)

In addition, farmers may well have recognized an inherent marketing problem. Unlike such dairy states as Wisconsin and New York, northern Minnesota and North Dakota lacked an accessible urban market for dairy products, while, even after the crash of 1886-7, they would have to contend in the beef market with the well-established western industry.\(^{60}\)

These problems with the cattle donation problem were highlighted by the success of the hog distribution on similar terms to those laid out for bulls. In comparison with cattle, especially dairy, pigs were easy to maintain, requiring little time, space, or special feed. They also had a quick market turn-around, a shoat being salable within six or eight months of birth.

Hill recognized the relative merits of his distribution programs, continuing to distribute hogs into the new century, while ending donations of cattle in 1890. In responding to a request for cattle donation in 1899, Hill's secretary, John J. Toomey, acknowledged the failure of his distribution scheme, blaming it on the farmers, "it is now eight of [sic] nine years ago since Mr. Hill distributed the thoroughbred bulls referred to, no bulls having been distributed by him since then; and on account of the ingratitude shown by the farmers generally, in disposing of these bulls for beef and other purposes, Mr. Hill will not, I think, distribute any bulls hereafter." Again Hill's claims to personal agricultural expertise, even when combined with extreme largesse, failed to change farming practices.\(^{61}\)

As with his drainage ventures in the Red River Valley, Hill found that, while he failed to influence farm practices personally, he had considerable success working in conjunction with other institutions. To protect his cattle schemes, Hill involved himself in the national campaign

\(^{59}\) James J. Hill, speech in Williston, N.D., 27 November 1911, Louis W. Hill Papers, James J. Hill Library, St. Paul, Minn.

\(^{60}\) Danbom, "The North Dakota Agricultural Experiment Station," 176-8.

\(^{61}\) John J. Toomey, 16 February 1899, General Correspondence; Toomey to James McClure, 24 January 1900, North Oaks Papers, JJHP.
against pleuro-pneumonia. In 1886 a number of cattle imported by Hill caught pleuro-pneumonia while in quarantine in Quebec. The same year the disease was identified in the Chicago stockyards, causing a nationwide panic. Congress had passed legislation in 1884 empowering the Bureau of Animal Industry to purchase and destroy animals suffering from certain diseases including pleuro-pneumonia, and in June 1886 it appropriated $100,000 for the work. The funding proved insufficient and various state laws hamstrung the work of the USDA officials, not allowing the purchase of diseased animals.62

In November of 1886 the national Consolidated Cattle Growers’ Association appointed Hill to the committee of Congressional legislation. This association had prepared a bill (the Miller Bill) to increase appropriations for work against pleuro-pneumonia. It also gave the USDA greater powers to purchase and destroy diseased animals or impose and enforce quarantine restrictions. Senator Spooner, in Senator Miller’s absence, introduced the bill in the Senate, while Representative Carey brought it to the House.63

Hill’s job, along with the others on the committee for Congressional legislation, was to convince congressmen from his state to vote for the bill. To facilitate this, Hill used The Farmer, an agricultural newspaper which he financed, to publish articles advocating federal control of this disease. The bill passed the Senate in February 1887, and on 3 March, the House. The new act gave the Bureau of Animal Industry half a million dollars for the work, with a fifth of that immediately available. In the

next Congress, two other bills regarding pleuro-pneumonia were introduced into the Senate to ensure continued funding of the program.\textsuperscript{64}

The work proved a great success. Utilizing the power of the federal government and the expertise of its employees, the Bureau had completely eradicated pleuro-pneumonia in the United States by 1892, at the total cost of 1,509,100 dollars. Once again, as with drainage in the Red River Valley, Hill learnt the benefit of working with other institutions in promoting agricultural change. In neither case, though, did Hill truly dictate the results; a disadvantage he would later realize.\textsuperscript{65}

Hill also tried to disseminate information during these early years to the farmers by sponsoring an agricultural newspaper. The Farmer started publication in the spring of 1886 under the editorship of one George W. Hill (no relation to the family), and it had its base in the Minnesota fairgrounds. Hill completely financed it, and within a year had become concerned about its lack of success. By April 1887, the newspaper had a subscription list of only 6,000 farmers throughout the Upper Midwest and had cost Hill over $56,000.\textsuperscript{66}

George Hill, concerned that Hill would stop financing the paper, tried to explain its lack of success. Much of the high cost, he concluded, could be attributed to the one-time expense of starting a new newspaper, including purchasing equipment. He also explained the failure of the newspaper to obtain more subscriptions saying "It would be useless to deny the deep prejudice existing among a very large section of the farming class against a paper which does not join with them in or rather lead them in the direction of unreasoning antipathy to the other classes of the community"

\begin{itemize}
\item \textsuperscript{64} Farmer (St. Paul), 27 January 1887; Congressional Record, 49th Cong., 2d sess., 1887, 18, pp. 272, 1854, 2122-24, 2175, 2182-98, 2386, 2554; Fourth and Fifth Annual Reports, 10; Congressional Record, 50th Cong., 1st sess., 1888, 18, pp. 88.
\item \textsuperscript{65} Eighth and Ninth Annual Reports of the Bureau of Animal Industry for the Years 1891 and 1892, USDA (Washington, D.C.: Government Printing Office, 1893), 74.
\item \textsuperscript{66} In contrast the Michigan Farmer had a circulation of 12,000 in 1857, the Southern Cultivator 10,000 in 1852, and the American Agriculturist 45,125 in 1859. Later, under the direction of Herbert Myrick, the Farmer reached a subscription figure of 90,000. Albert Lowther Demaree, The American Agricultural Press, 1819-1860 (New York: Columbia University Press, 1941), 351, 375, 385; Herbert Myrick to Hill, 5 December 1905, GNRP; George W. Hill to Hill, 11 April 1887 and 5 May 1887, General Correspondence, JJHP.
\end{itemize}
and in proving that all their ills are largely the result of their own shortcomings." Unwittingly, perhaps, George Hill hit upon one of the key reasons for farmer unwillingness to adopt changes proposed by outside reformers: the implication that they themselves were to blame for the problems of rural life.67

The paper had over the year, as George Hill pointed out, established itself as the "exponent of certain general principles." The paper promoted intensive, diversified farming, conducted on a scientific, or at least, professional, basis. Articles discussed crop rotation, visited successful "modern" farms, promoted dual-purpose cattle, and investigated various feeding regimens. In addition, the weekly interested itself in political matters concerning farmers. It provided detailed reports on the action taken to prevent pleuro-pneumonia at a state and national level, bringing James Hill's involvement to prominence.68

The paper also frequently addressed issues raised by various farmer organizations such as the Patrons of Husbandry and the Farmers' Alliance. It was extremely careful not to alienate farmers by dismissing or attacking these organizations. Instead it rationally discussed the planks of the movements, one by one. Of course, most of the farmers' ideas, especially those relating to railroad regulation, The Farmer deemed unnecessary and harmful. However, it did support the Grange's bid for a separate agricultural college in Minnesota, as the University of Minnesota had failed to provide hands-on practical farming education, relying too much on theoretical studies. To what extent a farm paper, launched in 1886 in Minnesota, had any chance of succeeding without fully endorsing the farmers' movements is doubtful, but George Hill's somewhat negative assessment of the reasons for lack of success probably had a considerable degree of validity.69

Additionally, farmers were traditionally non-literate in their learning techniques and cautious of outside recommendations. As late as 1913 a survey by the University of Minnesota discovered that although 84

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67. George W. Hill to Hill, 5 May 1887, General Correspondence, JJHP.
68. Ibid; Farmer (St. Paul), 6 January 1887, 13 January 1887, 27 January 1887, 3 February 1887, 10 February 1887, 16 March 1887, 14 April 1887, 28 April 1887, 2 June 1887, 9 June 1887.
69. Farmer, 6 January 1887, 10 February 1887.
percent of households took farming journals only 50 percent read them and only 43 percent "expressed any confidence in scientific farming methods."\textsuperscript{70}

By the summer of 1887 James Hill proposed to shut the paper down. The editor protested, claiming that it would be more expensive to close the presses than to keep them going while looking for a buyer. Hill agreed, and the paper continued through 1888. In September of that year the Orange Judd Publishing Company of Chicago took over the paper, moved it to Chicago, and renamed it \textit{The Orange Judd Farmer}.\textsuperscript{71}

Orange Judd had been a successful agricultural editor for several decades when he became involved with Hill. At the helm of \textit{The American Agriculturist}, he had been one of the first writers to convert scientific jargon into a readable style, thus making the work of agricultural scientists accessible to literate farmers. Hit hard by the depression of 1873, his paper failed in 1879. He moved to Chicago and wrote for \textit{The Prairie Farmer} for awhile, before availing himself of the opportunity to buy \textit{The Farmer}.\textsuperscript{72}

Despite Judd's takeover, James Hill remained financially involved in the paper. Because he had entirely financed George Hill, the paper owed him the outstanding bills for advertising and subscription, and the collection process proved long, convoluted, and largely fruitless. Judd also borrowed money from Hill to maintain the paper in exchange for shares in the publishing company. Judd claimed that he needed the money since George Hill had misled him regarding the financial and subscription status of the paper, but Judd had also been unable to meet the initial purchase price. Consequently as late as February of 1891, Judd still owed James Hill $15,000. By spring of 1891 all correspondence between the Judd company and the Great Northern officials had ceased and was never resumed.

\textsuperscript{70} Thompson, \textit{Social and Economic Survey of a Rural Township in Southern Minnesota}, 46-47.
\textsuperscript{71} Orange Judd to Hill, 8 September 1888 and 23 April 1889, General Correspondence, JJHP.
The next year Orange Judd died, and his sons took over the running of the paper, thus ending Hill’s involvement.\footnote{Judd to Hill, 23 April 1889 and 30 January 1891; to W. A. Stephens, 27 February 1891 and undated, General Correspondence, JJHP; Ogilvie, Pioneer Agricultural Journalists, 37.}

Through launching his own paper Hill aimed to influence farming practices and thus reinforce the economic stability of his railroad empire. This attempt, like so many of his early agricultural endeavors, failed due to general farmer unwillingness to accept Hill’s expertise and, consequently, his prescriptions.

In 1893 Hill completed the Great Northern Railway, reaching Seattle. The line, the most northerly of the transcontinental roads, spanned vast areas of unsettled territory and had been built without land grants. Instead it floated foreign loans based on the demonstrated haulage in the Red River Valley. Hill had to maintain and extend this haulage across the country, to pay the loans and make a profit. More than ever, he had to learn to exploit the railroad’s territory, and agriculture seemed the only viable option.

Working from an eighteenth-century English tradition Hill had established himself as a gentleman farmer only to find that the audience he needed to reach no longer deferred to this sort of expertise, if they ever had. Using demonstration and philanthropy, as well as The Farmer, Hill tried to convince farmers along the St. Paul, Minneapolis & Manitoba to practice intensive, diversified farming, with a focus on dual-purpose cattle.

Hill’s choice of image proved outdated. After the Civil War the American elite altered their approach to rural pastimes. No longer did the status of gentleman farmer legitimize privilege. As the nation moved away from its rural past, so agricultural pursuits ceased to endorse power, prestige, and influence and became more solely issues of leisure. Hill’s contemporaries also invested time and money in rural activities. Leland Stanford bred racing and trotting horses at his Palo Alto farm. He enjoyed watching horses on the track, studying the mechanisms of equine locomotion through photography. George Vanderbilt, on the other hand, established a
model farm on his Biltmore estate where he bred hogs and prize-winning Jersey cattle. Unlike Hill, these men did not try to influence the general farmer. They had little vested interest in solving the problems of rural life and "farmed" for self-gratification rather than for power and influence. Hill valued the country estate connotations of his North Oaks farm. However, his prime aim was to create an image of himself as a successful scientific farmer to lend his attempts to educate farmers sufficient authority. With much land available, wheat prices high, and good climatic conditions, most farmers simply ignored him.\(^{74}\)

By the time the rechristened Great Northern Railway reached Puget Sound, Hill had abandoned all of his earlier attempts at agricultural education. While keeping North Oaks, he sold all the cattle, letting the farm become more of a country retreat than a working stock farm, although he still bred horses, pigs, and sheep. Both Hill and the Great Northern had ceased involvement with the two newspaper enterprises. Hill had lost faith in farmers remarking in his private correspondence, "I would be glad at any time to help enlighten the farmers, but they seem determined on self destruction, and perhaps the remedy will come quicker by letting them have their own way for the present."\(^{75}\)

The most successful of Hill's early agricultural ventures seemed to have been his involvement with other institutions in the drainage in the Red River Valley. Having antagonized farmers by acting independently, Hill discovered success through more subtle and indirect means. He found that through promotion and expenditure he could influence local and state authorities to move in the desired direction. Hill's participation in the fight against pleuro-pneumonia and the extirpation of the disease through combining grassroots pressure with federal force, reinforced this concept of cooperation. Hill appreciated the success of this tactic and used it


\(^{75}\) Hill to C. O. Gregg, 15 April 1887, Letterpress Books, JJHP.
consistently throughout the subsequent decade, gradually finding that the gains made through cooperation were offset by his loss of control in determining agricultural policy and promotion.

By 1893, although in a good position economically, so much so that his railroad was one of the few to survive the crash of that year, James Hill entered the new decade abandoning his agricultural policies and programs and having to try to create new ones.
Business and political affairs surrounding his railroad ventures distracted Hill from agriculture for a few years after the Panic of 1893. Unlike such competing lines as the Northern Pacific and Union Pacific, the Great Northern avoided bankruptcy, due to a strong economic infrastructure in the Red River Valley, and an unusually well-built railroad with flat grades and quality equipment which pared the operating costs to a minimum.

The mid-1890s posed a political crisis for Hill. By inclination a low tariff Democrat, Hill had consistently supported Grover Cleveland, despite the president's initial failure to approve the St. Paul, Minneapolis and Manitoba's right-of-way across western North Dakota and Montana, and his refusal to mobilize government forces against Eugene Debs's American Railway Union strike of 1894. In 1896, faced with the dramatic growth of the People's Party and the double presidential nomination of William Jennings Bryan, Hill changed affiliations, backing William McKinley and contributing ten times more to McKinley's campaign, $100,000, than he had ever given to Cleveland. He also worked with Marcus Hanna, McKinley's genius campaign manager, to gain a Republican victory in the Upper Midwest. The struggles Hill faced economically and politically during the first half of the 1890s served to distract his attention from his endeavors to educate farmers.1

Hill also engrossed himself in expanding his railroad enterprise at the end of the century. The second bankruptcy of Northern Pacific in 1893 gave him a chance to acquire interest in this road and thus eliminate his major competition in the Northwest. Backed by J. P. Morgan, Hill embarked, in 1895, on a plan to bring the Northern Pacific under the umbrella of the Great Northern.

Initially Hill aimed to completely merge the Northern Pacific with his railroad and under his management. This scheme, named the London

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Agreement, was drawn up by Hill and various bankers in England in 1895. However, the idea of uniting the lines met with opposition from Henry Villard, president of the Northern Pacific, and that railroad's personnel, who objected to being subsumed by the Great Northern. The Morgan/Hill faction also feared substantial political opposition to the move resulting from the anti-monopoly fervor of the 1890s. Hill persuaded a friend and business associate, Thomas Pearsall, to file a test case for a merger. The ambiguous results convinced Hill and Morgan that unifying the two lines might prove difficult. Thus they scrapped the Agreement in favor of the London Memorandum of 1896. This eliminated most of the competition between the two lines, forging a "permanent alliance, defensive." Instead of a corporate merger, therefore, they settled for an agreement between the two companies aimed at maintaining high prices. The London Memorandum, unlike the straightforward merger proposed in the London Agreement, was definitely a "combination in restraint of trade," in violation of the Sherman Anti-Trust Act of 1890, but had the advantage of being less conspicuous.²

Hill found the new agreement less than satisfactory. Power rested in Morgan's hands, and the Great Northern did not even have a seat on the board of directors of the Northern Pacific. Over the next four years Hill worked to increase his control both by stock purchase and by badgering Morgan. The increasing respect of Morgan for Hill's abilities and the death of Charles H. Coster, the general manager of the Northern Pacific, in March 1900, gave Hill his opportunity. By late fall the Morgan group relinquished working control of the Northern Pacific to the Hill faction who immediately implemented the de facto amalgamation of the lines through personal ownership of stock and company cooperation. They completed the merger on 12 November 1901, creating a holding company, known as Northern Securities, and capitalized at $400 million.³


By the middle of the 1890s, with McKinley elected and the London Memorandum signed, Hill's interest in agricultural development began to revive. He focused attention on strengthening his territory's infrastructure and linking it to external markets.

With the completion of the Great Northern and the effective settlement of the Red River Valley, the geographical area of his interest expanded dramatically. Increasingly his attention focused on the problems of agriculture in the semi-arid West, especially the northern Great Plains which, in the 1890s, was still dominated, politically and economically, by stockmen and mineowners from the western hills. In confronting the arid West, Hill faced an environment unfamiliar to him. However, his aim remained the creation of small, intensive, diversified holdings. These fit his agricultural ideology and also supplied more business for the Great Northern than a few stockmen. As he later noted, "if you put a railroad in the garden of Eden and had none but Adam and Eve patronize the road, it would be bound to be a failure."\(^4\)

Hill's goals stayed the same but he adapted his strategy, reflecting lessons learnt. He acknowledged his earlier failures to convince farmers of his agricultural expertise and thus influence them directly. Building on the success of the drainage commission in Minnesota and the legislation against pleuro-pneumonia, Hill combined the weight of his political and economic strength with his agricultural expertise, and mobilized them all to aid other institutions which he saw furthering his agricultural goals. Working behind the scenes he sought to influence agricultural education, development, and legislation. Sponsoring programs for farmer education, drainage, irrigation, and dry farming, Hill bolstered his claim to expertise through the use of professional scientists and government officials. He remained closely involved with the projects he sponsored and chose them carefully. Profit to the railroad remained his own touchstone for judging agricultural programs; he rejected any scheme which did not promise this.

The failure of his early attempts at educating the farmers through personal endeavor necessitated a rethinking of his agricultural strategy. More and more he chose to act solely as financial backer for the

\(^4\) Anaconda Standard, 27 October 1909.
agricultural schemes that he advocated. He, or the railroad, provided funds and advice to various institutions and organizations which actually carried out the educational work. Increasingly, he relied on university and government experts to perform the business of educating the farmers.

Hill’s new deference to formal expertise did not represent a complete break with past tactics. He still cultivated his image as a farm expert. He continued to give speeches on agricultural issues to farmers, farmers’ organizations, and students. He also maintained his involvement in agricultural organizations such as the Minnesota State Fair and stressed the importance of diversification and scientific agriculture to increase production and income.5

In addition, Hill started an agricultural campaign which revolved solely around his business and transportation expertise, trade with the Far East. The decline of wheat prices convinced Hill that one way to ensure a good living for the farmer was to expand their market and encourage trade with the Far East. If established this trade would benefit the Great Northern enormously, allowing it to haul grain and other products, in both directions along the line. The Canadian Pacific had established a shipping network to the Far East in 1886. It dismayed Hill that this foreign line should profit from carrying American products.6

As early as 1892 Hill sent employee Herman Rosenthal to Japan, China, and Korea to investigate trade potential. The report was favorable, but the 1893 crash distracted Hill’s attention. He still investigated possibilities for starting trade using Japanese steamships, but found none suitable for Pacific crossings.7

5. William Liggett, board of managers of Minnesota State Agricultural Society, to F. I. Whitney, general passenger agent on Great Northern Railway, 15 August, 1896; J. C. Hanley to Hill, 8 February 1899; Liggett to Hill, 16 November 1899; Edward Tuck to Hill, 31 December 1902, General Correspondence, JJHP; Record (Fargo), September 1897.


7. Schonberger, “James J. Hill and the Trade with the Orient,” 178-90; Thomas Burke to Hill, 4 July 1893; Hill to Burke, 10 August 1894, Thomas Burke Papers, University of Washington Archives, Seattle, Washington (hereafter UWA).
The need for trans-Pacific commerce increased proportional to the eastbound haulage of the Great Northern. Working with his neighbor in St. Paul, Frederick Weyerhaeuser, Hill and his railroad greatly fostered the lumber industry of the Pacific Northwest. By 1896 the Great Northern Railway carried so much timber from the West that cars returned empty from the East, and Hill considered an empty car to be a "thief." The problem of what to send West revived the notion of trade with the Far East. In 1896 Hill sent more agents to Japan to investigate, and trans-Pacific shipping of goods traveling along the Great Northern started using Japanese vessels. 8

Unsatisfied with foreign ships, Hill lobbied for more American shipbuilding. With the advent of the Spanish-American War, he joined the campaign to secure federal subsidies for building merchant marine ships. Frustrated by congressional delays, Hill capitalized the Great Northern Steamship Company in 1900 and started to build his own ships, launching the first one in 1903. He planned to ship lumber east and cotton (from the South by way of the Burlington with which Hill had established a working affiliation in 1886) west and then across the Pacific. Hill’s promotion of oriental trade mirrored his earlier attempts at sponsoring agricultural education. He organized and financed the development of a trans-Pacific network independent of governmental institutions. 9

Hill’s usage of the North Oaks farm, however, reflected his changing attitude toward agricultural education. The farm, just ten miles north of his main residence in St. Paul, increasingly functioned more as the family’s country estate. In 1893, with eight children still at home ranging in age from eight to twenty-three and two grandchildren, the farm provided an important refuge, especially during the sticky midwestern summers.

The family played at North Oaks: fishing in Pleasant Lake, boating, riding, shooting, and going for country drives. The Hills often entertained guests and regularly celebrated Independence Day at the farm.

On 4 July 1899 Mary Hill wrote in her diary "A beautiful morning—The Flag was run up early—Mr. F. B. Clarke, Theodore Schurmeier and Louis went fishing. In the afternoon Papa, Mr. C. and Theodore went for a drive about the fields and pastures—A circus performance was improvised for James [Mary's grandson]—He the clown. In the evening we had fireworks, later singing &c."¹⁰

In fact the family spent enough time at the North Oaks estate to considered it as one of their residences. Mary Hill wrote on 28 April 1899, "I spent most of the day at North Oaks and found considerable to look about after the winter's occupation by Walter and Mr. Bridgeman," and the family commonly spent a large part of the summer there. Mary and her daughters established a social network in the area and attended the Catholic church in neighboring White Bear Lake.¹¹

The agricultural activities of the farm had also changed. By 1893 Hill had disposed of his Aberdeen Angus herd and, within two years, cattle breeding had completely ceased at North Oaks. Although continuing hog and horse breeding and feeding experiments, Hill definitely curtailed his involvement in all aspects of farming during the last decade of the nineteenth century. In 1896 a description of the farm in the St. Paul Pioneer Press sounded much more like a country estate than a working farm. "At North Oaks today carriage horses are bred, dairy cows are kept, sheep feed upon the pastures, swine fattened on the mast of oaken forests, elk and deer browse upon the growth of a woodland enclosure and a herd of buffalo roams through a large range." The 144 head of cattle produced dairy products for local sale to offset the farm's expenses. In 1897 Hill resumed investment in blooded stock, buying some Ayrshires, but use of the cattle remained personal. Having found that his assumed role of gentleman farmer failed to sway his audience, Hill found other, more personal uses, for his farms.¹²

In terms of his financial investment in agricultural education Hill changed direction. Instead of launching his own schemes to convince the

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¹⁰. Mary T. Hill's diaries, 3 May, 4 July, and 21 October 1899, JJHP.
¹¹. Ibid, 13 July 1885, 28 April, 7 June, and 16 July 1899, JJHP.
farmers of the efficacy of new agricultural practices, Hill preferred to subsidize programs run by other institutions, such as the state and the University of Minnesota. In this way, he acquiesced to a modern, almost Progressive notion, of expertise. Hill did not acknowledge that other experts were more knowledgeable than himself. Rather, he hoped that they would prove more effective in conveying information to farming audiences and implementing improvement schemes. Thus, their expertise would complement his.

This deference to other experts first emerged over the issue of drainage in the Red River Valley. Hill helped establish a state program of drainage which expanded in 1897 and culminated in the 1901 creation of the Minnesota State Drainage Commission. Although railroad financial involvement had ceased by this point, Hill kept a close eye on the work through Erza Valentine, one of Hill's pointsmen in the valley, and the president of the Board of Drainage Commissioners. Valentine reported annually to Hill on the state of drainage, and, in return, received an annual pass to the railroad to carry out his work.13

In addition to working with the state on the drainage in the Red River Valley, Hill also contributed to the University of Minnesota's attempts at outreach education in the valley. In 1888 the university hired Willet Hays, later assistant secretary of agriculture under "Tama" Jim Wilson. The university mandated Hays to increased grassroots support for the institution. To achieve this, Hays developed an innovative new program to extend the institution's agricultural experiment stations and high schools throughout the state.14

Embarking on this effort in 1894, Hays needed to investigate possible sites for these stations around Minnesota. Seeking free railway transportation, he approached the Great Northern head offices in St. Paul. On his second visit, Sam Hill (James's son-in-law) ushered him into Hill's

13. Howard Leigh Dickman, "James Jerome Hill and the Agricultural Development of the Northwest" (Ph.D. diss., University of Michigan, 1977), 24; Erza Valentine to Hill, 3 January 1902, General Correspondence, JJHP.
14. "The Northwestern Experiment Station," p. 37, undated mss., Institute of Agriculture files; Willet Hays, "Early History of the Northwest Agricultural School and Experiment Station," p. 7, 10-11, undated mss., Agricultural Experiment Station--Early Papers and Correspondence, Agricultural Experiment Station Papers, University of Minnesota Archives, Minneapolis, Minn. (hereafter UMA).
office. Immediately, the older Hill started to indicate on a map a proposed gift of land near Crookston, Minnesota. Hays protested, "Why, Mr. Hill, I am hardly in a position to consider gifts of land, for the board of regents has not even formally considered this project." Hill placed his hand on Hays's shoulder and said, "Young man you go ahead."\(^{15}\)

Hill got his way. The university received the 476.61 acres from the railway on the condition that the land always be used as an experiment station. Hill persuaded the Minnesota legislature that year to authorize the establishment of branch stations for the university. Hill's donation of land also freed a state appropriation of $20,000 for buildings and equipment as well as the purchase of the land for the Northeast Station in Grand Rapids, Minnesota.\(^{16}\)

Hill understood that the land eventually would be used as a branch agricultural school as well as an experiment station. Hays had explained his dream to the railroad man, and the idea of the school figured greatly in Hill's motivations for giving the land. Through his generous combination of gift and action, Hill gave substance to his belief in the importance of agricultural education based on scientific principles. The donation also underscored his desire that the state organize agricultural education and that actual farms should figure prominently in this education.\(^{17}\)

The gift of land to the university supported his own agricultural education ideas and offered the potential for increased production in the valley. Hill hoped that, unlike the early drainage work by the railroad, the university could effectively demonstrate the benefits of tile drainage.

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15. Hays, "Early History of the Northwest Agricultural School and Experiment Station," p. 10-11; "Northwest Experiment Station," p. 11, undated mss., History 1908-1938; Conrad Selvig, "The Northwest Experiment Station at Crookston," p. 3, undated mss.; Andrew Boss to Selvig, 2 July 1924, Agricultural Experiment Station--Early Papers and Correspondence, Agricultural Experiment Station Papers, UMA.

16. Hays, "Early History of the Northwest Agricultural School and Experiment Station," p. 10-11; "Northwest Experiment Station," p. 11, undated mss., History 1908-1938; Conrad Selvig, "The Northwest Experiment Station at Crookston," p. 3, undated mss.; Andrew Boss to Selvig, 2 July 1924, Agricultural Experiment Station--Early Papers and Correspondence, Agricultural Experiment Station Papers, UMA.

17. Letter from Hays, 1 October 1908, Institute of Agriculture Papers, UMA.
In addition, the donation proved a timely philanthropic gesture on the behalf of a railroad that was not without competition in the area.18

The donation not only facilitated drainage experimentation, but also formalized Hill's belief in the efficacy of demonstration farms as a learning tool, moving the onus from his own personal farm at North Oaks to the state institution for higher learning. The reliance on demonstration farms as the best method of teaching agriculture reflected Hill's alliance with farmers and advocates of more traditional educational methods. From as early as the 1850s farmers considered model farms, run at a profit, the perfect way to instruct agrarians. They could visit these farms and witness new machinery and modes of bookkeeping and husbandry which they could transfer to their own lands. These farmers saw little need for the expertise of agricultural science to teach farming and had little faith in extant university demonstration farms which consistently operated at a loss.

For all his advocacy of modern, scientific farming, Hill remained wary of academic experts. To him, demonstration farms were the key to agricultural education, and he thought that each county should have a demonstration farm. "This model farm would be simply a tract of land conforming in size, soil treatment, crop selection and rotation and methods of cultivation to modern agricultural methods. Its purpose would be to furnish to all its neighborhood a working model for common instruction." He saw practical demonstration as more effective than "a lifetime [of] reading books or listening to stump speeches."19

Whatever benefits Hill's gift of land had with respect to his relationship with settlers or competition with the Northern Pacific in the Red River Valley, it backfired in terms of his relationship with the

university. Although he had admitted that the land was wet, this was an understatement. When James Boss of the St. Paul Experiment Station first arrived at the site in the early spring of 1895, he described it as, “a discouraging proposition for farming, and a very much better one for ducks.” The problem persisted for many years despite repeated and expensive attempts to drain the land. Experiment Station Superintendent Conrad Selvig reported that the annual flooding delayed seeding, endangered the foundations of the buildings, and provided material discomfort. It also washed unwanted seeds on to the experiment farm, which, according to Selvig, “gave the exceedingly unfortunate impression that the Farm suffered from chronically careless management.” Only in 1908, after the laying of 50,000 feet of drainage tile and the construction of one and a half miles of open ditch, was the site finally drained effectively.20

The problem of draining the site and the embarrassment of maintaining a swamp did not enhance the relationship between Hill and the university. Despite the enthusiasm of Crookston’s first superintendent, a Hill protégé named Torger Hoverstad, the university viewed the station as “an unwanted waif” and the state thought it a “white elephant.” Hoverstad’s annual reports to the dean of agriculture exuded “hope and idealism” but little progress, and in 1906 he was fired. In addition, the drainage problem led to a twelve-year delay in founding an agricultural school.

As the costs of maintaining the station multiplied, many university personnel viewed the railroad baron less favorably. Conversely, the university actions regarding the station did little to endear the institution to Hill. In fact, with no school founded and little demonstration taking place, his skepticism toward the university’s commitment to agricultural education and its claim to expertise, increased. Consequently, the gift of the Crookston land marked the totality of Hill’s formal relationship with the university for many years. Despite this, Hill maintained personal contact with many of the faculty, especially those who agreed with him regarding the importance of diversification and the nature

20. Boss to Selvig, 2 July 1924; Selvig, “The Northwest Station at Crookston,” p. 3; Agricultural Experiment Station--Early Papers and Correspondence, Agricultural Experiment Station Papers, UMA; Norene Roberts and Claire Strom, “Statement of Content, National Register Nomination for University of Minnesota,” p. 29, mss., State Historic Preservation Office, Minnesota Historical Society, St. Paul, Minn.
of agricultural expertise. Agricultural experts, such as Andrew Boss and Thomas Shaw, empathized with Hill, in both practical and theoretical arenas.21

The conflict over expertise was not limited to an external battle, pitting academics against farmers and other amateurs. Agricultural scientists at land grant schools disagreed among themselves about their role and methods of implementation. Recipients of lengthy, formal education tended to perceive their mission as one of pure research with little or no educational component. Those who had achieved professorial positions before the new emphasis on academic credentials, remained more loyal to the original mandate of land grant schools. They thought that their work should combine applied research with a strong educational mission, acting as a bureau of information for farmers of their state. Because of their personal backgrounds, this latter group, like Hill, rejected the mysticism and elitism that the new generation of scientists wove around their expertise. This internal conflict, in conjunction with the struggles raging externally between the universities, farmers, federal bureaucracy, and corporate entrepreneurs like Hill, did not find resolution until the second decade of the twentieth century and the creation of the federal extension service.22

In the 1890s Hill retained his interest in drainage and agricultural development of the Red River Valley, but, because of the bad press the railroad received in the 1880s, he expressed his involvement indirectly, through state agencies. The problems of draining the Crookston site, however, being more than just an issue of experimentation, unfortunately undermined Hill's relationship with the University of Minnesota, leading to a growing antipathy. The antagonisms surrounding the Crookston station presaged the railroad builder's future relationship with other institutions involved in agriculture.

21. Conrad Selvig, "Early Days," undated ms., Agricultural Experiment Station--Early Papers and Correspondence, Agricultural Experiment Station Papers, UMA.
22. Charles E. Rosenberg, No Other Gods: On Science and American Social Thought, (Baltimore: Johns Hopkins University Press, 1961), 154-70; David B. Danbom, "Our Purpose is to Serve": The First Century of the North Dakota Agricultural Experiment Station, (Fargo: North Dakota Institute for Regional Studies, 1990), 16-19.
With the extension of the Great Northern to the Pacific Coast, Hill became interested in the problems of agriculture in the arid West. Here his interest started to diverge from that of some railroads because his line was built without land grants. Unlike the St. Paul, Minneapolis & Manitoba in the Red River Valley, the Great Northern could not make money from land sales along its line, but only from haulage. This meant that the railroad personnel invested a large amount of time in finding effective ways to exploit their territory. Settlers were important and encouraged, but it was crucial that settlement prove successful.

The decline of foreign immigration to the United States, and especially to the northern Great Plains in the late 1890s, exacerbated this problem. Immigration did not pick up until well into the new century, and, by that time, the Canadian government had started a propaganda campaign to attract American farmers. This campaign appeared especially successful in areas just south of the international border, with Minnesota and North Dakota contributing one third of the emigrants. Although many of these Americans returned home and the net permanent migration numbered no more than 200,000, concern about this exodus ran high during the late nineteenth and early twentieth centuries. Low wheat prices compounded and contributed to this problem of attracting settlers. Prices had fallen in the 1880s with the influx of plains wheat onto the international market and did not recover, remaining low throughout the rest of the century. In 1893 wheat prices fell still further and did not start to rise again until 1897.  

Hill confronted the problem of making his railroad pay in the face of these disadvantages by continuing his push for small-scale diversified farms. To facilitate this in the West, he chose to stress the potential of irrigation and crops other than wheat. Learning from his experiences

during the previous fifteen years, he worked through a number of companies in Wenatchee, Washington, rather than acting independently.

Hill had a vested interest in the Wenatchee area. In 1888 lawyer Thomas Burke and a group of other speculators from Seattle had purchased land on the Wenatchee Flats. They offered Hill a quarter of their holdings if he would route the Great Northern through the area. Hill accepted, and therefore established a personal landed interest in the area, as well as his railroad's interest in haulage.24

The Wenatchee River Basin drains 1,350 square miles in central Washington. The river flows from the Wenatchee Lake, forty-seven miles southeast to join the Columbia River. The town of Wenatchee is at the confluence of the two rivers. The subsoils of the valleys consist of gravel and sand deposited by glaciers and floods. Overlying this is one to three feet of fertile, pervious, sedimentary top soil, conducive to irrigation.25

Irrigation started in the valley shortly after the passage of the Desert Land Act in 1877 when a settler, Philip Miller, hired Jacob A. Shotwell to build some ditches on his land. By 1881 Miller had established a "very promising orchard." Other settlers followed suit over the next decade, but it soon became apparent that the valley needed large-scale irrigation works for which the capital was not available. Irrigation generally proved successful when completed, providing water for bountiful crop yields and the establishment of orchards.26

In November 1891, a year before the Great Northern reached the valley on its way to Puget Sound, Thomas Burke, by then a representative for the railroad, incorporated the Wenatchee Development Company. The company aimed to develop the townsite by building up industry. Its first interest

24. Keith A. Murray, "The Highline Canal: Irrigation Comes to Wenatchee," Columbia 17 (Winter 1995/96): 20; Burke to Hill, 8 June 1891 and 5 May 1892, Thomas Burke Papers, UWA.
was the construction of sawmills, but it also wanted to extend irrigation works in the valley. Burke held the majority of the stock, but in 1892 the Great Northern purchased five hundred shares, thus assuming considerable power within the company.  

At the same time an itinerant newspaper man named Arthur Gunn moved to Wenatchee as cashier and manager of the local branch of the Columbia Valley Bank. Soon he assumed the post of local agent for the Great Northern and started to promote irrigation. He borrowed enough money from Hill to help Shotwell, who had bought and irrigated his own land by 1891, to enlarge his ditch and draw up plans to irrigate the entire valley. As in the Red River Valley with Valentine, Hill promoted agricultural development in Wenatchee from behind the scenes, using Gunn as his front man.  

The Wenatchee Development Company investigated the possibilities of irrigation around 1894. Burke had approached two private companies and planned, if that failed, "to see what can be done under the irrigation law of the state." The Panic of 1893 and the subsequent depression, delayed work in the valley, but in 1896 the various groups united, forming the Wenatchee Waterpower Company with Gunn as president. 

This company was effectively a subsidiary of the Great Northern. Increasing national opposition to monopolies and other business mergers which hampered free trade had culminated in the passage of the Sherman Anti-Trust Act of 1890. To avoid prosecution under this law, railroads, and other large corporations, hid their involvement in the development of businesses integral to their success. Thus, instead of running coal operations directly or arranging for special rates connected to bulk

27. Manuscript History of the Wenatchee Development Company, Great Northern Railway Papers, Minnesota Historical Society, St. Paul, Minn. (hereafter GNRP); Accounting Department of Great Northern to secretary of Wenatchee Development Company, 19 May 1892, Thomas Burke Papers, UWA.


29. Arthur Gunn to Burke, 4 October 1894, 11 May, 11, 15, 16, 26, 27 June, 2, 6, 16, 21 July, 16, and 21 November 1895; Memoranda, Papers of Wenatchee Development Company, 1896, Thomas Burke Papers, UWA; Burke to Hill, 8 October 1894; Manuscript History of the Wenatchee Waterpower Company, GNRP.
purchase, railroads created subsidiary firms such as the Great Northern's Sand Coulee Coal Company. These businesses, independent on paper, were under the de facto control of the parent organization. The Great Northern applied this tactic to various development operations including the Great Falls Development Company and the Wenatchee Waterpower Company. The latter not only received a loan of $13,000 from the Great Northern to complete all the proposed irrigation system, but, the railroad also bought the complete issue of bonds in April 1897, totaling $15,000.\(^\text{30}\)

The Wenatchee Waterpower Company's paper independence from the railroad also protected Hill and the Great Northern from farmer accusations of arbitrary corporate action. By concealing his direct involvement, Hill hoped the irrigation endeavors would appear to stem from grassroots action and thus be more palatable. Arthur Gunn worked on the continued construction of canals and also busied himself inducing settlers to move to the valley. He completed the ditch extension in 1898 and, the next year, persuaded a Dunkard Brethren congregation from North Dakota to move to the area. Sale of irrigated land started in 1899 with parcels of five to ten acres fetching $140 per acre including perpetual water rights.\(^\text{31}\)

This success was only achieved at high financial cost. By mid-1898 Gunn wrote to Hill that the bondholders should take possession of the company which was on the verge of financial failure. The Great Northern did take over, assuming responsibility for the company's liabilities, and pushing the completion of a gravity irrigation system by December 1898. Thus, although in the end the scheme increased the valley's production especially of fruit, it cost far more than anticipated, and Hill was "not overly pleased with the result of our irrigation matters."\(^\text{32}\)

Despite the achievements of the project, the valley still required additional irrigation. Local residents decided to hire W. T. Clark who had

\(^{30}\) William Samuel Bryans, "A History of Transcontinental Railroads and Coal Mining on the Northern Great Plains to 1920" (Ph.D. diss., University of Wyoming, 1987), 64-221; Gunn to R. I. Farrington, 30 January 1900; Manuscript History of the Wenatchee Waterpower Company, GNRP; Farrington to Burke, 23 June 1890; Gunn to Hill, 7 June 1898, Thomas Burke Papers, UWA.

\(^{31}\) Murray, "The Highline Canal," 22; Hull, *A History of Central Washington*, 541, 567-69; Burke to W. T. Clark, 7, 12 April, 19 May 1902, Thomas Burke Papers, UWA.

\(^{32}\) Manuscript History of Wenatchee Waterpower Company, GNRP; Farrington to Burke, 11 March 1898, Thomas Burke Papers, UWA.
recently built a successful irrigation system in the Yakima Valley, to build the Highline Canal. Clark funded the project initially with a loan from Robert Livingstone, president of the Oregon Mortgage Company based in Portland, using farmers' land in the valley as collateral. Clark and his associate managed to acquire "$150,000 for the work from Scottish capital representing in Portland and other interests."33

In addition the new Wenatchee Canal Company entered into an agreement in May 1902 with the Wenatchee Development Company. This specified that Clark would irrigate the Development Company's land for $6,000, some land, and a $1.50 per annum per acre fee for the rest, and that the work would be completed by May 1904.34

Clark's work progressed well, but once again cost more than anticipated, and he continually searched for funding to prevent bankruptcy. Once water flow started in September 1903, farmers in the valley complained of the high cost and often failed to take full advantage of the work done. Although setting out new fruit trees, Thomas Burke complained that they "don't seem to carry on farming or horticulture according to modern methods. They do not seem to realize the importance of care and judgment in the selection of fruit trees or in their proper care afterwards." Therefore Burke suggested to Hill that the railroad company might send out a horticulturist to the valley to instruct farmers. By 1902, although considerable irrigation work had taken place in the Wenatchee Valley, it had all been characterized by high costs to the railroad and railroad personnel, and had yet to produce the substantial income for the farmers or the line that materialized in the ensuing decades.35

In 1896 Hill embarked on a second irrigation project, this time on Crab Creek in Adrian, Washington, another tributary of the Columbia draining more than 5,000 square miles around. Working with J. D. McIntyre

33. Murray, "The Highline Canal," 22; Burke to Hill, 6 June 1902, GNRP.
34. Agreement between Clark and the Wenatchee Development Company, 10 May 1902, GNRP.
35. Hull, A History of Central Washington, 556A, 560; Burke to Hill, 8 July 1902, GNRP. In 1904 the Great Northern shipped 1,663,944 lbs of apples from the valley in the month of October, with a total freight charge of $9,125.66. Four years later 13,757,855 lbs were shipped at a cost of $107,641.39. "Apple Shipments from Wenatchee During the Month of October 1904, 1905, 1906, 1907, 1908," GNRP.
who founded the Cooperative Irrigation Company, Hill agreed to transport the equipment necessary for the construction of irrigation works and, on their completion, to buy the irrigated land at ten dollars an acre. Hill specified which lands he intended to buy in advance of construction along with the proviso that "If there are any of these lands that the water cannot reach by gravity, your Company [the Cooperative Irrigation Company] will be required to put in the necessary pumping works and to the water on the ground."36

To protect his investment, Hill ordered an independent survey of the land, which reported that the prospects were good. Construction began in 1896 and Hill kept a close eye on the project receiving reports from various officials when they passed through the area. Little consensus existed on the advancement of the work, with disconcerting reports that the water flow would prove insufficient to irrigate the proposed area. A letter from Chief Engineer Jonathan Stevens followed, stating that "There is no doubt in my mind that there is plenty of water in Crab Creek one year and another to irrigate twenty to twenty-five thousand acres of land, possibly a good deal more."37

McIntyre soon ran out of capital and asked the Great Northern for an advance to complete the work. To "prevent delay and possible abandonment" of the project, the Great Northern advanced McIntyre $1,200 and paid his bills amounting to $3,800, but McIntyre still fell short of expectations. The railroad soon found itself embroiled in a court case when various suppliers sued McIntyre for non-payment.38

In August 1898, with the completion of work in the Wenatchee Valley, Hill had Gunn turn his attention to the problems around Adrian. Gunn's report bore little hope for the future of the project. He recommended that the Co-operative Irrigation Company immediately take some settlers to court

36. Symons, Report of An Examination of the Upper Columbia River, 971; Burke, Shepard & McGilvra to F. E. Ward, 16 December 1897; Hill to J. D. McIntyre, 6 March 1896; Great Northern to McIntyre, 11 August 1896, GNRP.
37. Nathan Butler to Hill, 11 June 1896; R. Harding to W. H. Newman, Second vice president, 9 January 1897; Jonathan Stevens to F. E. Ward, assistant to the president, 15 July 1897, GNRP.
38. Burke, Shepard & McGilvra to Ward, 16 December, 30 December 1897, 14 January 1898; Ward to Burke, Shepard & McGilvra, 25 January 1898, GNRP.
who had the potential to claim water rights under prior appropriation, that Crab Creek had insufficient water to irrigate the intended land in the summer, and that the ditch and its flumes were poorly constructed and would require considerable repairs to operate efficiently. Within a year, Hill had turned the work around Adrian over to Gunn, appointing him president of the Adrian Irrigation Company. Once again Hill found that irrigation though private companies proved difficult, if not impossible, to conduct successfully and extortionately expensive.39

In his promotion of irrigation in the valleys of the Columbia Plain Hill discovered a new flaw in his tactic of working through other institutions. Unlike in his dealings with the University of Minnesota, his expertise was not questioned. Instead he found, like many others, that the private companies just could not float the necessary capital for successful irrigation. Faced with a practical rather than strategic problem, Hill looked to ally with other institutions, notably the federal government, for future reclamation work.

Hill learnt a similar lesson in pursuing irrigation in Montana. Irrigation started in the Milk River Valley in 1889 when one T. B. Burns moved north from the irrigated Gallatin Valley and acquired water rights to land recently ceded by the Indians. The next year he constructed a dam on the river. The flow of the Milk River in the summer proved insufficient for irrigation on a substantial level but a survey in 1891 by E. S. Nettleton of the USDA concluded that it would be feasible to divert water from the St. Mary's River to the Milk.40

In September 1897 J. D. McIntyre wrote to Hill detailing a survey he had completed of the irrigation potential of the Milk River Valley. Although the survey seems to have been commissioned by Hill, he took no action. Unlike the Wenatchee Valley, large-scale irrigation in northern Montana continued to be complicated by the presence of several Indian reservations. This necessarily added a level of federal involvement, and several departments, to any plans.

39. Gunn to Hill, 31 August 1898; Gunn to Farrington, 5 December 1899, GNRP.
The next year, after the Canadian government had started an irrigation project on the St. Mary River, irrigation promoter, W. M. Wooldridge of Chinook, Montana, pressured Hill to involve himself in work on the Milk River. This pressure continued for a year and met with categorical refusal. Hill stated that Montana seemed very disinterested in the railroad, charging high taxes and failing to protect railroad property. In addition to lacking philanthropic feelings toward the state of Montana, Hill pointed out that, "The Company owns no lands there and does not intend to buy any. . . . It does not now or at any time hereafter, expect to spend any money in internal improvements in Montana."41

Hill's reasons were strong; unlike in the Wenatchee Valley he had no personal involvement in land sales along the Milk River. However, despite what he wrote to Wooldridge, he recognized the need for irrigation in the area and worked quietly, behind the scenes, to involve the federal government in such a project. In late 1899 he and Senator R. F. Pettigrew, chairman of the Senate Committee on Indian Affairs, tossed around the idea of the government donating land to the state of Montana for the purpose of irrigation, but nothing came of it.42

His experiences in Washington and Montana convinced Hill that irrigation could not be completed through private individuals or corporations. The financial costs were prohibitive and the need for engineering excellence high. At the end of the 1890s Hill remained convinced that irrigation was necessary to make the land along his line fruitful. His faith in promoting agricultural development through other institutions had, in this instance however, been considerably refined. By 1898 the financial failure of irrigation in eastern Washington persuaded Hill that only the federal government had the resources necessary to undertake reclamation projects.

Others also preached the necessity of federal involvement in irrigation. Attempts at irrigation during the 1870s and 1880s, both by private and state organizations, had consistently fallen short or failed

42. R. F. Pettigrew to Hill, 4 December 1899; Hill to Pettigrew, 7 December 1899, GNRP.
altogether because of the high cost of construction. In addition, states contested jurisdiction over water which failed to conform to political boundaries. Increasingly, proponents of irrigation looked to the federal government to provide the necessary funding, if not to actually conduct the work. From the late 1880s congressmen drafted numerous bills proposing national involvement in western irrigation. In 1891 Salt Lake City hosted the first of many irrigation congresses to agitate for federal irrigation. These efforts proved fruitless partially because of eastern and midwestern opposition to government expenditure on the West and partly to conflicts among the westerners themselves as to how the irrigation should be implemented. Some, such as Senator Francis E. Warren and Elwood Mead, both of Wyoming, advocated government surveys and construction of dams and reservoirs, but wanted the land distribution and water allocation to be the preserve of the states. This would necessarily favor the controlling powers in each state which, in Wyoming, remained the cattle interests. Others, trying to promote more intensive settlement, preferred the government to control land sales as well as construction.43

In 1897 Hill became more involved in pressuring the federal government. At the irrigation congress in Wichita that year he worked with George Hebard Maxwell to form the National Irrigation Association. This organization ostensibly aimed to educate the American citizens to the needs for irrigation and the vital role that the federal government had to play. Although the association did perform this work through its publications, lectures, and farmers' institutes, its more important role was lobbying for irrigation legislation in Washington, D.C.44


Hill's initial contribution to the National Irrigation Association, as well as motive force, was financial. He persuaded two, and later four, other railroads to join the Great Northern in contributing five thousand dollars per annum to the organization. By 1899 the Great Northern, the Southern Pacific, the Santa Fe, the Union Pacific, and the Northern Pacific each contributed five hundred dollars a month to maintain operations at the association's headquarters in Chicago. Maxwell headed the organization.\footnote{J. Kruttschnitt, assistant to the president of the Southern Pacific Company, to Hill, 6 April 1903, GNRP.}

Maxwell had been interested in irrigation for the small-scale farmer throughout his career. Observation of private and state attempts to irrigate land in California led him to realize the necessity for federal intervention. A dynamic, forceful publicist, Maxwell launched Maxwell's Talisman after the formation of the National Irrigation Association to promote irrigation and undertook the new art of political lobbying with zeal.\footnote{Andrew Hudanick Jr., "George Hebard Maxwell: Reclamation's Militant Evangelist" Journal of the West 14 (July 1975): 108-121; Robinson, Water for the West, 9; Hill, Highways of Progress, 189-90.}

Hill's involvement did not end with financial support. During the first few years of the twentieth century he worked hard supporting Maxwell's maneuvers in Washington and exerting his own influence with congressmen. By late 1901 the sides in the debate had been clearly defined. On the one side stood Hill and his supporters who favored total federal control of irrigation; on the other stood westerners who supported turning over irrigated lands to the states. Elwood Mead, now head of the Office of Irrigation Investigations in the USDA, led the latter group. Mead's history as the territorial and state engineer for Wyoming linked him closely to the grazing interests of the West for whom control over land distribution was a vital issue.\footnote{Pisani, To Reclaim a Divided West, 235, 308-9; Paris Gibson to Hill, 27 November 1901, GNRP}
found attractive, was a common theme in his speeches, such as the one to the Minnesota Agricultural Society in 1904 where he stated that, "Better men and better women live in the country." 48

Although Hill had always believed in the primacy of farming, conflict with stockmen had only arisen in the 1890s due to a synchronicity of events. The completion of the Great Northern and the need to maximize the haulage from the railroad's territory was the prime motivation. Little money could be made from hauling stock and supplying a few ranchers in comparison with a well-settled agrarian hinterland. In addition, Hill opposed the continued practice of cattlemen accumulating vast tracts of public domain and thus precluding farming settlers from acquiring good land. The ranchers achieved this through buying up scrip and by taking advantage of the Desert Land Act, the Timber and Stone Act, and the commutation clause of the Homestead Act, as well as by various nefarious practices. Finally the increase in emigration to Canada worried those interested in the settlement and expansion of the American West. Thus Hill's support of federally sponsored irrigation accompanied his desire to undermine the cattle interests' control in the West and to foster an increase of farm settlement. 49

A federal irrigation bill drafted in early 1901 by George Maxwell, Senator Francis Newlands, and Frederick Haynes Newell the chief hydrographer of the US Geological Survey, met many of Hill's aims. The bill proved radical in two important ways. Unlike earlier bills proposing federal irrigation this one did not plan to finance irrigation from the rivers and harbor fund or from taxation. Rather, it proffered a revolving fund where government sale of irrigated land would create the monies for subsequent works. This provision eliminated the main bone of contention for eastern politicians: cost. The bill also assigned the distribution of

48. William E. Doughterty to Hill, 22 April 1884; Hill to H. E. Fletcher, 26 May 1886, JJHP; Havre (Montana) Plaindealer, 20 February 1904.
49. Havre Plaindealer, 20 February 1904; Gibson to Hill, 20 August and 27 November 1901; Hill to St. Clair McKelway, 29 November 1901, GNRP; Bicha, "The American Farmer and the Canadian West," 43-46; Hill to George Maxwell, 16 April 1902, Letterpress books, JJHP.
irrigated land to the General Land Office rather than the state, thus effectively removing control from the cattlemen.50

The debate in Washington centered around two different sets of western interests with both sides trying to commandeer eastern support. Hill’s main supporters in Congress were Senator Paris Gibson from Montana and Senator Henry C. Hansbrough from North Dakota, and they identified their main opponents as “the covert opposition of representatives from the Rocky Mountain states who are evidently under the influence of speculators and large cattle men.” Hansbrough acted as the senatorial sponsor of the Newlands Reclamation Act and saw danger lying in the West, “The South and East are willing that we should have what we want. The trouble, I fear, is in the Southwest with an occasional kicker from the Northwest.” Hill helped the bill by “bring[ing] the eastern members of the House to a complete understanding of the question.” He also persuaded the Burlington men to support the legislation thus gaining a “powerful influence over the Wyoming delegation, in who we [Gibson] have but very little confidence.”51

Various changes in the legislation which Maxwell felt removed its teeth, complicated the passage of the bill. The alterations gave more control to the states, causing Maxwell to renege his support in February of 1902. Hill followed Maxwell’s lead, understanding the bill to be “totally impracticable.” Maxwell and Gibson believed that the bill would fail and hoped that they would at least be able to force legislation for federal irrigation in a couple “special localities, which had been recommended by the Geological Survey.” By April, however, the bill had “recently been so amended as to give very general satisfaction, and is now endorsed by Maxwell who will work for it with all his ability.” In preparation for passage of the bill, Paris Gibson persuaded the Secretary of the Interior to withdraw 1,700,000 acres from homestead access in Montana to await irrigation. Once again, Maxwell and Gibson exhorted Hill to use his

50. Hudanick, “George Hebard Maxwell,” 116; Pisani, To Reclaim a Divided West, 303.
51. Henry Hansbrough to Hill, 3 December 1901; Gibson to Hill, 4 January 1902; Hansbrough to D. S. Lamont, 11 February 1902; Maxwell to Hill, 12 April 1902; GNRP.
influence in Congress, and in June 1902 the Newlands Reclamation Act passed. 52

Although the passage of the Act represented the fulfillment of the main aim of the National Irrigation Association, the organization did not disband nor did its funding cease. Rather, Maxwell embarked on a campaign to repeal the Desert Land Act and the commutation clause of the Homestead Act. Additionally the organization desired a forestry bill to protect water supply and wanted to ensure that the federal monies appropriated for irrigation did not become a lever in interregional squabbles. Overall, though, Hill’s involvement in irrigation reached its zenith of optimism in 1902 with the passage of the Act and the anticipation of federally sponsored irrigation throughout the West, but especially in northern Montana which had sparked Hill’s interest initially and promised to be one of the first areas developed. Certainly in the case of irrigation, Hill, in 1902 at least, could claim his policy of promoting agricultural development through other institutions had triumphed. 53

As Hill finessed his strategy of using other institutions to realize his agricultural goals, he never forgot that the bottom line was profit to the railroad. Thus he rejected any proposed scheme which would not benefit the Great Northern, including ideas of dryland farming and sugar beet raising on the northern Great Plains.

Dryland farming, as it related to water-conserving cultivable techniques, was largely initiated by a Vermont native, Hardy Webster Campbell. In 1879 he entered a homestead claim in Brown County, Dakota Territory. He began to experiment with various types of cultivation techniques aimed at conserving the moisture in the soil and in 1890 he invented the sub-surface packer. This machine comprised a series of wedge-shaped wheels which revolved around an axle cutting deep into the soil, and tamping it at the bottom of the cut while mulching the top soil. It provided the basis for the Campbell System of cultivation which Hardy

52. Pisani, To Reclaim a Divided West, 315-19; Hill to Lamont, 13 February 1902; Gibson to Hill, 9 April 1902 and 3 May 1902; Maxwell to Hill, 12 April 1902, GNRP.
53. Maxwell to Hill, 28 June 1902; Darius Miller, vice president of the CB&Q, to Hill, 20 July 1902, GNRP.
Webster Campbell sought to publicize through the Western Agricultural Improvement Society, founded in 1895.54

The basic premise behind the subsoil packer centered around the capillary moisture in the soil. This is the small amount of water which surrounds each soil particle and moves through the soil as water through a sponge. Campbell and others argued that to maximize retention and use of this water two things must be done. First, the subsoil, from two to sixteen inches below the surface had to be packed down to encourage capillary action upward through the soil. Second, the top layer of soil had to be carefully and repeatedly cultivated in order to decrease capillary action thus hindering evaporation on the soil surface.55

Campbell gradually developed more concepts related to dryland farming. By 1902, when he published his first Soil Culture Manual, the Campbell System advocated 160-acre farms. On these farms he recommended deep fall plowing, cultivation before and after seeding, and alternating summer fallow with tillage of the soil during the fallow as well as the crop years. Campbell's success lay partially in his ability to tie his work closely to the scientific experiments being done at various experiment stations. He frequently quoted F. H. King of the Wisconsin Experiment Station and Willet Hays of the Minnesota Experiment Station, among others. Most importantly, though, Campbell was an effective publicist. He incorporated a number of dry farming organizations including The Campbell System of Farming Association. He also published many dry farming journals and magazines such as the monthly Dry Farming Magazine, and proselytized his ideas to the railways, which happily financed and promoted his work.56

As early as 1895 two of the future Hill lines, the Northern Pacific and the Burlington, financed dry farming promotion through Campbell. In that year he ran five experiment stations for the Northern Pacific in North Dakota and gave lectures on dry farming along the Burlington. In 1907 his

54. Hargreaves, Dry Farming, 85-6.
56. Hargreaves, Dry Farming, 86-7, 90, 92-4.
focus shifted to the Southern Great Plains and he worked for the Southern Pacific and the Santa Fe lines.\(^57\)

Campbell approached the Great Northern in these early years, but he failed to interest James J. Hill in the potential of dry farming. In 1895 he wrote to Hill requesting a meeting to discuss the viability of dry farming. He wanted Hill's help in proving "to our people and outside parties that we have a country actually superior to the Eastern humid districts." Campbell undermined his position by omitting to enclose a circular, a point noted on the letter in Hill's handwriting, but he did meet with Hill, or one of the road's officials, as well as with the management of the Northern Pacific. Letters between the railroads indicate that Campbell asserted to J. W. Kendrick, General Manager of the Northern Pacific, that Hill had agreed to finance a dry farming periodical for Campbell. However, no evidence exists that Hill, in fact, made this promise, and the financial support did not materialize, probably due to Hill's lack of interest.\(^58\)

In early 1897 B. S. Rufsell of the Great Northern drafted an agreement with Campbell regarding dry farming experiment stations in North Dakota. The agreement stated that the Great Northern would give Campbell $3,300, free transportation, and supplies for maintaining seven 40-acre farms for three years, in return for Campbell supplying 1,000 copies of *Campbell Soil Culture and Farm Journal* throughout the region, and instructing local farmers on the methods and benefits of dry farming. This agreement was never put into practice.\(^59\)

With Hill firmly in charge of the Great Northern's agricultural policies in the 1890s, the line followed his lead and channeled its efforts into irrigation promotion. Hill's emphasis on irrigation remained strong as late as 1904 when he stated that all the land in Montana, cultivable without irrigation, had been claimed. Hill's caution concerning dryland farming can also be linked to the Great Northern's need, far more than some other railroads, to have successful and sustained development of land, not just an initial attraction of settlement and land sales. Because of

\(^{57}\) Ibid.

\(^{58}\) Hardy W. Campbell to Hill, 26 January 1895; J. W. Kendrick, general manager of Northern Pacific, to Hill, 25 March 1895, GNRP.

\(^{59}\) B. S. Rufsell, 15 February 1897, GNRP.
reasons intrinsic to the structure of the Great Northern, Hill resisted joining other lines in promoting the dry farming boom at the end of the century. In the end, Hill’s resisted any agricultural idea that he did not perceive as benefiting his road.60

Hill’s attitude toward experimentation with sugar beets on the northern plains proved similarly resistant. In 1897 the North Dakota Agricultural College decided to resume experiments in sugar beet growing which had started five years previously. The president of the college, John H. Worst, wrote to Hill inquiring if he knew of any limestone quarries along the line. Milk of lime is used in sugar manufacture to remove nonsugars from the beet syrup. Hill’s reply was discouraging. Completely ignoring the question of limestone, he asserted that he had no doubt that sugar beets could be successfully grown in Minnesota and North Dakota. However, he believed that the business could not be profitable, and that no-one would invest the necessary money in establishing a factory. With its cheap labor and government subsidies, Hill asserted that European sugar would always undercut the American product. Worst replied that the investigation was still important. It would determine if, indeed, sugar beet growing was feasible, but impracticable due to high labor costs, a situation which he stated might change as “inventive genius [overcame] the cheap labor of Europe through horse power and machinery on these level fertile prairies.”61

In this interlude, Hill clearly placed practicality before the increasingly dominant notion of scientific expertise centered around pure research. He saw no value in experimentation which led to no immediate financial prospects. If American sugar could not sell, why investigate its production? If the situation changed (which it did after the Second World War), then scientific expertise could be applied to the problem.

By 1902 Hill’s involvement in agriculture had changed direction in a seemingly very successful way. Removing himself from the position of eighteenth-century gentleman farmer, he started to utilize other institutions to further agricultural development. In his drainage endeavors he worked through the state of Minnesota, while in irrigation he first utilized subsidiary companies and later lobbied for federal involvement.

This reflected an acquiescence to the increased professionalization of the late nineteenth century as well as changes in education. No longer did wealth itself indicate knowledge and expertise. Increasingly these were displayed through formal education and institutionalization. Thus Hill retreated into his position as a business expert, using this expertise to mobilize others. Employing engineers and publicists, lobbying politicians on a state and federal level, he had, by 1902, achieved more, agriculturally, in the previous nine years than in the entire fifteen preceding the completion of the Great Northern.

Despite these successes, Hill’s adoption of the modern, narrow definitions of agricultural expertise was evidently more pragmatic than theoretical. Utilizing professionals toward his own ends, he never questioned his own claim to expertise, colored by the needs of his railway. Using the organization genius with which he had built the Great Northern, he maneuvered people and opinions at will, rejecting ideas, however scientifically sound, when they did not promise direct benefit to his corporation or his territory.
"THE NATION'S FUTURE," 1902-1907

Hill's elation at the passage of the Newlands Reclamation Act proved ephemeral, failing to last through the first decade of the new century. Although his well-built and efficiently run railroad continued to profit, changes in national politics reduced Hill's influence in Washington, D.C. Concurrently, continued interaction with national agencies served to highlight the gulf between the federal agricultural vision and that of Hill and his railroad.

Having weathered the economic and labor crises of the 1890s, the Great Northern's personnel turned their attention to increasing traffic on the road. More ore and lumber haulage required more freight cars, from 13,818 in 1895 to 34,954 in 1906. This also reflected a continued expansion of wheat production in North Dakota, which replaced Kansas in 1890 as the nation's leading wheat state. Unfortunately, Hill's political involvement did not mirror his economic successes.

Hill's financial and tactical support of McKinley's 1896 and 1900 campaigns enabled him to maintain the federal leverage he had enjoyed under Cleveland. Like many contemporary business moguls, however, he had little faith in Theodore Roosevelt. Young Roosevelt had proved his interest in progressive reform as a New York City police commissioner, as governor of New York, and in a variety of other political posts. His popularity following the charge of San Juan Hill made him contemplate running for the presidency in 1904. The Republican Party decided to control this "damned cowboy," and capitalize on his popularity, by burying him in the vice-presidential slot in the 1900 election. McKinley's assassination in 1901,

thus, caused great consternation among the political and business elite, placing "that madman" in the White House.\(^3\)

Hill's concerns about Roosevelt were quickly justified. Continuing his support of Progressive regulation now president, Roosevelt decided to reinforce the Sherman Anti-Trust Act, which had been undermined by an unsuccessful suit against E. C. Knight in 1895. He chose Hill's Northern Securities Company for this test case and, in February 1902, Attorney General Philander Knox filed suit.\(^4\)

The Supreme Court did not return a verdict until 1904. In the interim, Hill and his associates invested considerable energy in attempts to mend fences between the Northern Securities conglomerate and the president. This included a 1903 meeting between Howard Elliott, president of the Northern Pacific, and Roosevelt, at which Roosevelt assured him that the law would be enforced although he was glad to have a "Harvard man" in charge of the railroad. Elliott happily reported this implicit assurance of old boy support, failing to note the indirect attack on Hill, a self-made man who left school at fourteen. Hill, perhaps less naive than Elliott, railed against Roosevelt and invested considerable time and energy in defending the corporation he viewed as his personal property.\(^5\)

The ripples from the Northern Securities case washed over all areas of Hill's life. The time and energy he invested affected his health, and his family rallied around as he saw himself "growing old and helpless." He was amazed, as the case unraveled, that the court admitted no benefit in

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5. Howard Elliott to Hill, 5 November 1903, General Correspondence, James J. Hill Papers, James J. Hill Library, St. Paul, Minnesota (hereafter JJHP); Malone, James J. Hill, 8, 222; Martin, James J. Hill, 514-17.
trusts or security companies. Attacks on combinations had been growing for more than a decade. Hill failed to understand the extent to which politicians had embraced the question of regulation, for both pragmatic and ideological reasons. Fighting the case, he found himself defending an increasingly obsolete ideology in every possible way, including contributing an essay to a book in defense of trusts. Hill’s Quixotic position as a result of *Northern Securities v. U.S.* which dissolved the Northern Securities Company, foreshadowed his growing alienation from the mainstream of agricultural thought during the last fifteen years of his life. The case had more immediate consequences on Hill’s agricultural success reducing his political influence and exacerbating his antagonism to federal agencies.

Roosevelt’s accession to the presidency and his embarkation on a plan of trust-busting, removed Hill from the federal influence he had enjoyed under Cleveland and McKinley. This shift had a detrimental effect on Hill’s efforts to strengthen the agricultural infrastructure of his railroad. Hill had hoped that irrigation would facilitate his vision of a West where “the small farm, thoroughly tilled, [replaced] the large farm, with its weeds, its neglected corners, its abused soil and its thin product.” And where “Every intelligent and progressive farmer will join stock raising with grain raising. Nature has provided the cattle to go with the land.” But, when the Reclamation Service failed to meet these expectations, Hill had little political recourse.

Three weeks after the passage of the Newlands Act, Congress created the Reclamation Service within the United States Geological Survey headed by Frederick Haynes Newell. In 1907 the Service became an independent agency and, in 1923, was renamed Bureau of Reclamation. Newell embodied the growing dominance of expertise in America at the end of the nineteenth century. An engineering graduate of MIT, he had led the hydrological studies of Geological Survey from 1890. He saw the Newlands Act as the

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opportunity to centralize and rationalize issues of water throughout the West, under the guidance of well-trained engineers rather than farmers or politicians. This perspective left no room for variants such as state water laws or farmer income, propelling Newell into conflict on many fronts. 8

The Reclamation Service proved slow and expensive in fulfilling Hill's visions. The Service undertook a large number of projects to maximize political support and costs proved much higher than estimated. The requirements of the Newlands Act added further delays. Before a project received federal expenditure the Reclamation Service's engineers had to establish the practicality of irrigating the region, and a grassroots interest had to be demonstrated. The latter placed the onus for advancement once more on the farmers whom Hill had found so conservative.

Lacking political power, Hill could only rail against the inefficiency of the Service and divert his agricultural attention elsewhere. Hill remained interested in irrigation and continued to try and foster it working through other institutions. As these efforts proved ineffective he began to invest more energy in dryland farming and crop diversification. 9

Hill's declining federal influence, and the growing difficulties of working with other agencies, led Hill to revisit independent action. Unlike in the 1880s he chose to do this through the Great Northern as well as through personal action. Hill's disillusionment, with the state of American agriculture and with the dedication of governmental and academic agencies to rebuild it according to his vision, grew significantly in the early twentieth century. With few available alternatives, Hill displayed his fears for "the Nation's Future" in foreboding Malthusian speeches, predicting America's inability to feed its citizens. "Within twenty years under the present conditions our wheat crop will not be sufficient for home consumption," and then "how are we to provide our own children with . . . their daily bread." He showed concern with soil fertility and

conservation. "The soil is exhausted and never replenished. What must be the end?" 10

Hill remained active in the push for irrigation even after the passage of the Newlands Reclamation Act by continuing to work through other institutions. He firmly believed that in irrigation he had found a salvation for the nation as well as a meal ticket for his line. "No agency at work," he insisted, "does so much to ameliorate, to elevate, to raise the general level of comfort and intelligence and even of character as the reclamation of our desert lands." Hill's idealism reflected the central precepts of groups such as the Country Life Commission. Hill and other rural reformers of the time offered a modernized vision of a Jeffersonian America. Hill argued that irrigation would help a family support itself in relative comfort and independence—replenishing the yeoman class that Jefferson saw as key to American democracy; it would also facilitate dense settlement along his line where a "spirit of associative enterprise" could be cultivated. These intrinsic benefits would counter the negative trends of industrialization: the creation of "immense population centers, surrounded by a country sparsely settled, imperfectly cultivated, and looking to the metropolis for the realization of dreams." Hill's ideals were, as ever, inseparable from the needs of his line, which would profit from the high haulage generated by increased agrarian settlement. 11

Continuing to lobby for more federal intervention through George Maxwell and the National Irrigation Association, Hill also operated independently, trying to promote irrigation under the Newlands Act in various localities along his road, especially North Dakota.

In North Dakota some interest had emerged in irrigation as early as 1889, with plans to irrigate the state by means of canals tapping the Missouri River. The promotion came largely from state politicians who viewed population growth as both the key to, and the proof of, the state's

10. Hill, Highways of Progress, 38; Sioux City Tribune, 8 September 1906.

success. Settlers, still availing themselves of the relatively well-watered lands in homesteading showed little interest.\textsuperscript{12}

To satisfy the conditions of the Newlands Act promoters of irrigation formed the North Dakota Irrigation Association at Hill’s instigation. The association held its first meeting in Bismarck on 20 and 21 October 1903. Its president was Erastus Appleman Williams, part of the McKenzie ring. Alexander McKenzie had worked on the construction crews of the Northern Pacific before the crash of 1873, settling in Bismarck at that time. He continued to work for the railroad in various capacities, gradually acquiring political control over the state as Republican national committeeman. McKenzie always represented the interests of the railroads and other Twin Cities businesses, helping to make North Dakota, politically as well as economically, a colonial extension of St. Paul/Minneapolis.\textsuperscript{13}

Through the association, Hill aimed to keep irrigation in North Dakota at the forefront of the federal and state mind. The group paid for a state engineer to assess irrigation potential independent of the federal government. It then mobilized bipartisan support for irrigation on a state level and held annual congresses. The organization also developed an educational component; to fulfill Hill’s aim of making “the value of irrigation . . . a permanent part of the common stock of knowledge; not the possession of a band of enthusiasts or a picked body of scientists and specialists.” Here again, Hill expressed a broad conception of expertise. Although acknowledging that irrigation could only be funded on a federal level and constructed by engineers, he assumed that the basic principles should be within the reach of all farmers. Thus James Hill hoped to blend practical agricultural education and scientific expertise into an integrated program of corporate and social development that, in his estimation, would save the nation.\textsuperscript{14}


\textsuperscript{13} Ibid; E. A. Williams to Louis Hill, 19 January 1905, Outgoing Correspondence, E. A. Williams Papers, North Dakota Historical Society (hereafter NDHS); \textit{Fargo Forum and Daily Republican}, 21 and 22 October 1903; Elwyn B. Robinson, \textit{History of North Dakota} (Lincoln: University of Nebraska Press, 1966), 219-20, 230.

\textsuperscript{14} Hafermehl, “To Make the Desert Bloom,” 13-27; James J. Hill, Speech at National Irrigation Congress in Portland, Oregon, 1905, LWHP.
Although relatively successful on a political level, the association had much less success in convincing farmers of the importance of irrigation. Farmers in North Dakota assumed a more radical stance than their compatriots in neighboring states even before the rise of the Nonpartisan League. They continually resisted the McKenzie ring and their colonial status, and attempted, largely unsuccessfully, to control the railroads through legislation and taxes as early as 1890. Consequently the North Dakota Irrigation Association, with its political associations, met with considerable skepticism.15

The first state irrigation congress was well attended, but the same could not be said of the next two. Hill dismissed the farmers’ lack of enthusiasm as ignorance: “Work in North Dakota has been delayed by the slowness of the people, owing to a lack of appreciation of the great benefits accruing, to co-operate.” North Dakotans’ caution, however, had a solid foundation. Farmers were wary of plans which would commit them to indeterminate costs. The structure of the Newlands Act made them responsible for repaying the expense of irrigation in annual increments, yet the Reclamation Service only provided them with an estimate of the final charges. Many found this unsatisfactory, especially since the rainfall generally remained adequate into the 1920s, seemingly negating the need for irrigation. Some boosters also feared that promotion of irrigation would solidify external impressions of North Dakota as an arid state, thus discouraging immigration. Finally, the North Dakota Agricultural College and its experiment stations showed little interest in irrigation, being more concerned with crop rotation and diversification. Agricultural academics’ lack of interest did have some significance.16

Historians debate when the work of agricultural scientists became accepted by the majority of the rural population. David Danbom argues that it took the agricultural depression of the 1920s before farmers relinquished their independence, while at the other extreme, Alan Marcus and Howard Segal postulate farmer dependence on experts by the early twentieth century. Neither argument is persuasive. Farmer deference to agricultural scientists was a gradual and regional process. Many variables, including the personnel of specific agricultural colleges, the general state of the local farm economy, and the success of their methods in meeting farmer needs, affected the rate of grassroots acceptance of academic expertise. Certainly, by the early twentieth century, the Farmer Institute Movement had become well-established and farmer attendance at meetings grew.¹⁷

In North Dakota, institutes started out as voluntary endeavors by the staff. Their popularity led to state funding and a growing trust between some farmers and educators such as Torger Hoverstad, who took over as superintendent of the institutes in 1907. The University of Minnesota fired Hoverstad in 1906 for failure to drain the lands of the Crookston Experiment Station. He had a wealth of experience in farming in the Red River Valley which North Dakota farmers recognized and appreciated when he crossed the River.¹⁸

The promoters of irrigation in North Dakota countered this lack of interest among their state’s academics by using professors from Montana. Perhaps due to a history of successful irrigation in areas such as the Gallatin Valley, Montanans as a whole, were more positive toward reclamation. The Montana Agricultural Association, headed by W. M. Wooldridge of Hinsdale who had corresponded with Hill in the 1890s regarding irrigation in Montana, promoted reclamation relentlessly but, unlike in North Dakota, the agricultural college under Frederick B.


Linfield, also displayed an active interest. Consequently, Williams persuaded Wooldridge and Linfield to attend the various congresses and the North Dakota State Fair, and the former brought exhibits of crops grown under irrigation shipped gratis on the Hill-run Northern Pacific. Wooldridge acknowledged the importance of Farmers’ Institutes in conveying information on irrigation in Montana and suggested the importance of something similar in North Dakota.19

Hindered by a lack of grassroots interest in irrigation and of academic support, political conflict further stymied promoters in North Dakota. Senator Henry C. Hansbrough, a McKenzie man, had consistently supported the Hill faction with respect to reclamation and settlement in lobbying for the Newlands Act. However, his re-election in the winter of 1902 had been contingent on him appeasing “the cattle and land speculating interests in his State.” Hansbrough recognized the difficulty of his position, caught between two opposing groups, the railroads and the ranchers. These groups not only contested power throughout the arid West but held very different views on irrigation and land allotment. Ranchers wanted complete control of water access and to acquire large tracts of land through homesteading fraud. The railroads wanted increased settlement, and so desired governmentally controlled communal water access and the repeal of land laws which lent themselves to fraud.20

Consequently, Hansbrough tried to walk a tightrope between the two factions in 1903 by introducing a land bill that made land fraud more difficult. Unfortunately, this bill did not appease the leaders of the National Irrigation Association. Maxwell thought it would benefit speculators, and the resulting media and letter row between these two proponents of irrigation in North Dakota did little to facilitate the progress of irrigation in the state.21

20. Robinson, History of North Dakota, 230; Maxwell to L. W. Hill, 6 August 1903, Great Northern Railway Papers, Minnesota Historical Society, St. Paul, Minn. (hereafter GNRP).
21. Fargo Forum and Daily Republican, 20 October 1903; H. G. Hansbrough to Williams, 9 December 1903, E. A. Williams Papers, NDHS.
Despite these obstacles, irrigation promoters did make progress. Farmers in the Buford-Trenton region on the Missouri and the Little Muddy River, which feeds into the Missouri just below Williston, agreed to comply with the requirements of the Newlands Act. They formed water associations and contracted to pay back the cost of irrigation over the course of twelve years. Both valleys are composed of rich alluvial soil, and the farmers aimed to grow potatoes, sugar beets, and alfalfa on the irrigated land. The valleys were also on the main line of the Great Northern, and thus farmers had a greater assurance of being able to market their crops. The area also had the advantage of being near a large deposit of lignite coal. This coal, while useless for railroads because of its tendency to spontaneously combust if stored, could generate electricity at the new power plant, which one booster described as being "practically as solid and substantial as the pyramids themselves." The electricity ran a main barge pumping unit on the Missouri River and other, smaller, pumps to distribute the water. The Reclamation Service completed construction in June of 1907 and intended that the project should ultimately irrigate 52,000 acres.22

The Secretary of the Interior James Garfield formally opened the Buford-Trenton and Williston project in 1907. The consequent publicity hype did not solve the inherent problems of cost and farmers' resistance to irrigation. The majority of farmers holding land in the irrigation districts refused to join the water users' association and assume the consequent costs, so they were blocked from access to water when it started pumping in 1908. Irrigation promoters over-optimistically believed that high productivity on the irrigated lands would soon persuade reluctant farmers of the project's benefits.23

Hill's experiences with promoting irrigation in North Dakota demonstrated his continued problems with realizing his agricultural vision. Having lobbied and advertised on a national level for five years, he faced, in 1902, the same problem of garnering grassroots farmer support which had plagued him in his earlier years of agricultural promotion. Continuing to

operate through other institutions he helped found the North Dakota Irrigation Association, lending the organization his stature and agricultural expertise. As with his distribution of cattle and his attempts to drain the lands of the Red River Valley, Hill found his credentials insufficient. Farmers relied on a more complex network of information than that provided by one railroad man, backing a group of unpopular politicians, when deciding to change their practices. In North Dakota, regardless of the efforts of Hill, boosters, and politicians, only the farmers with direct access to the railroad showed any interest in irrigation, and only a few of them.

Unlike in North Dakota, the problems faced by irrigation promoters in Montana in the early years of federal reclamation, tended to be more political than social or economic. Irrigation in the state had begun as early as 1865 along the river valleys. By 1880 350,000 acres of the state “were under the ditch.” This acreage had increased to nearly one million acres by the passage of the Newlands Act. Montanans, both farmers and academics, were, thus, well-aware of the benefits of irrigation.24

Elwood Mead, as head of the USDA’s Office of Irrigation Investigations, wanted greater state control over water issues in Montana. Mead had been both the state and territorial irrigation engineer in Wyoming where he helped create the water policy of the state constitution in 1889. The Wyoming law extended the Colorado system of placing unappropriated water under state ownership by claiming that all water in the state was state property for which people could apply for a right of use. This creation of a powerful bureaucracy worked fairly effectively in a state which operated essentially as an oligarchy, but it portended conflict in states like Montana where a variety of vested interests contended over available water. Mead supported federal involvement in irrigation to an extent, realizing that only the national government had the resources for the extensive surveys necessary. However, he was one of the main advocates of a decentralized federal program which would continue to allocate substantial power to individual states.25

25. Worster, Rivers of Empire, 158, 182-83; Pisani, To Reclaim a Divided West, 60-64, 307-09.
Due to their different approaches to federal irrigation, Mead had always been in conflict with Newell of the Geological Survey who favored federal centralization and rationalization. This conflict expanded in 1898 when Mead was appointed head of the newly created Office of Irrigation Investigations in the USDA. With the triumph of centralized control in 1902 and the appointment of Newell as the Commissioner of the Reclamation Service, Mead moved the struggle to the state level. He encouraged disgruntled western politicians to pass laws similar to those established in Wyoming, intended to reassert state control over water as much as possible. This, according to George Maxwell, would hamper the Service's ability to work in the state which offered "greater possibilities than any other state for development under the national irrigation policy."  

Maxwell foresaw that the livestock interests would favor greater state control over water while the mining interests would be disinterested and thus open for persuasion by ranchers. Increased state control needed to be stymied to give federal irrigation its head. Maxwell strategized by calling in markers and persuading allies such as Hill to do the same. In addition he sent a lengthy press release to all Montana editors, legislators, and members of the National Irrigation Association, detailing the problems inherent in the idea of state control of water. The efforts of the National Irrigation Association proved successful, indefinitely postponing or derailing in the Senate all four bills introduced into Montana's lower House.

Other problems surrounding irrigation in Montana focused on Hill's pet project in the Milk River Valley. The valley was federally approved for irrigation in 1903 and district engineer Cyrus C. Babb surveyed it for irrigation potential. In hearings before the House committee on irrigation of arid lands in 1904, Babb reported that irrigation in the lower valley between Chinook and Glasgow was eminently feasible with a storage reservoir

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26. Pisani, To Reclaim a Divided West, 307-09; Worster, Rivers of Empire, 173; Letter from Maxwell, 11 February 1903, GNRP.
on the St. Mary’s River, in what is now Glacier National Park, channeling additional water into the lower Milk River. Unfortunately, a variety of problems confronted construction. A cattle company owned the proposed reservoir site, and the irrigation works would result in flooding some Great Northern tracks. Railroad engineers had estimated that the necessary modifications would cost four hundred thousand dollars, and it was unclear how the burden of this cost would be divided between the government and the railroad.28

More importantly, after rising in western Montana, the Milk River first flows northeasterly into Canada for over a hundred miles before recrossing the international border into the eastern part of the state. The St. Mary’s River also flows north into Canada and by 1904, a governmentally supported irrigation company, the Canadian Northwest Irrigation Company, had established a canal network bringing water to thirty thousand acres. The international border considerably complicated matters and forced Babb to involve the state department in negotiations over water rights. Newell, also present at the hearings as the head of the Reclamation Service, pointed out that, although initially appearing most favorable, the problems encountered on the Milk River suggested that reclamation monies in Montana could be better used elsewhere in the state, namely the southern portion. This diversion of attention from the Milk River Valley did not endear the service or Newell to Hill. It demonstrated that the problem of relying on other agencies for agricultural change lay in the potential for diverging agendas. Geographical and bureaucratic complications, forced Hill to consider other options for making the railroad’s territory in Montana profitable.29

On a federal level Hill had not abandoned irrigation-related agitation, although the accession of Roosevelt had diminished Hill’s


29. House, Hearings Before the Committee on Irrigation of Arid Lands, 1904, H. Doc. 381.
political clout. Having achieved the irrigation legislation, Hill, Maxwell, and their congressional allies turned their attention to what Hill described as "the insane policy of land laws which tend toward the exhaustion of the public domain by the land monopolist and speculator." These various loopholes in the homesteading and other land laws allowed ranchers, miners, and speculators to appropriate large acreages. Mine and cattle companies encouraged their employees to register claims which they later purchased.  

Cattle owners showed particular concern to control access to water, especially after the blizzards of 1886 and 1887 forced them away from free ranging toward more controlled ranching. The dramatic losses of cattle in the storms had convinced many cattlemen to provide winter shelter and fodder for their stock. They needed regular access to water to raise forage and water their herds while in confined winter quarters. Thus, they frequently used the land laws to gain control of streams in the public domain, making the adjacent land useless for farming or other ranchers.  

The National Irrigation Association began a push to repeal laws which facilitated land fraud, namely the commutation clause of the Homestead Act, the Timber and Stone Act (1878), and the Desert Land Act (1877). Joseph Quarles of Wisconsin introduced the bill in November 1903, and the Senate referred it to the Committee on Public Lands.  

The composition of the opposing forces in the conflict over the Quarles Bill resembled the struggle over state or federal water control in Montana. On the one side, according to Maxwell, were the "Elwood Mead-Wyoming coterie" who wanted to protect their interest in "speculative land grabbing or the building up of great stock ranches to the exclusion of settlers." Mead, so dependent on ranching support, could not afford to back actions so obviously designed to undermine his constituency.  

30. James J. Hill, Speech at National Irrigation Congress in Portland, Oregon, 1905, LWHP; Pisani, To Reclaim a Divided West, 90, 165.  
33. Maxwell to Hill, 27 May 1903; to J. W. Cooper, 6 August 1903, GNRP.
On the other side aligned Hill, Maxwell, and the members of the National Irrigation Association. Maintaining a Jeffersonian belief in the inherent superiority of small-scale, independent farmers, they desired a West settled by a plenitude of yeomen. They couched this view in the most ideological terms. They opposed "speculating interests" who were "grabbing" land intended "for the benefit of the people." Only true settlers could utilize land "which is now idle or waste," and the nation depended on the association who faced "a very hard fight, for personal interests [the opposition] will get up and work in the night while patriotism is asleep." These repealers did not deny their self-interest in the matter. They insisted instead that the "development of the west" was vital "especially to the commercial interests . . . who must have population to create trade." 34

For Hill, at least, the ideological stance of the supporters of the Quarles Bill was not assumed. Despite his holdings of western lands, such as those given to him by the Wenatchee Development Company for routing his railroad through the valley, he did not see himself as a "speculator," a negatively charged term, but a "developer." That those supporting the Quarles Bill stood to gain financially from the repeals, did not make their contention that the legislation represented the best for America any less sincere. Self-interest compounded rather than contradicted their position, and they stood firm backed by a legacy of over a century of Jeffersonian agrarianism.

At stake in these arguments was not just access to land but, in the broader scheme, the social and moral future of the nation. America was undergoing wrenching transitions: from rural to urban, agrarian to industrial, and local to centralized control by corporations and the state. Hill, like other industrialists such as Henry Ford, occupied a paradoxical position. A foremost beneficiary of these changes, he yet vociferously opposed some of their consequences and upheld many moribund ideals which he had helped overthrow.

In 1903 the National Irrigation Association marshaled its forces once again, this time for the annual session of the National Irrigation Congress

34. Maxwell to L. W. Hill and to J. W. Cooper, 6 August 1903; Press Release, no date; Paris Gibson to Maxwell, 27 July 1903, GNRP.
held in September in Utah, "the heart of the enemy's country." Maxwell foresaw problems with Hansbrough who had supported the Newlands Act. Hansbrough, faced with conflicting visions of irrigation within his constituency, chose a proactive stance by introducing a bill that walked a middle road. He proposed amendments to the Desert Land Act which would make fraud more difficult and outright repeal of the Timber and Stone Act. The commuted homestead clause he advocated leaving, arguing that fraud occurred less than "the yellow journals would make us believe," and that the clause provided an important benefit to genuine homesteaders. To ameliorate matters further, Hansbrough argued that the repeal of the Desert Land Act would hinder public land sales and thus prevent the construction of a sizable fund for reclamation.35

The forces of the National Irrigation Association opposed Hansbrough's actions, denying his claims that little fraud was committed under the Desert Land Act and the commutation clause of the Homestead Act. Instead, Montana Senator Paris Gibson, a close friend, business partner, and political ally of Hill's, saw Hansbrough's actions as "just what the stock-men and speculators want, and . . . simply designed to give them more time in which to gobble up the remaining agricultural land." Gibson also dismissed as ridiculous the idea that repeal should be delayed in order to fund reclamation, writing, "How absurd that we should permit the wholesale stealing of the public land, for the sake of creating a reclamation fund!"36

Hill worked hard, but ineffectively, to publicize the salient issues. He integrated the complex issues of land laws into his public addresses of the time, telling audiences to "Keep demanding the repeal of vicious and fraudulent land laws still in force, by which all our lands are being dissipated," but his political opportunity had vanished. Hansbrough's appointment as chairman of the Senate Committee on Public Lands compounded the problems confronting the National Irrigation Association, despite the fact that the committee also held powerful pro-Hill forces such as Knute

35. Maxwell to Cooper, 6 August 1903, GNRP; Congressional Record, 58th Cong., 1st sess., 1903, 37, pt. 1: 181; Hansbrough to Hill, 12 October 1903; Gibson to Hill, 21 and 24 October 1903, General Correspondence, JJHP; Great Falls Daily Tribune, 21 October 1903.
36. Gibson to Hill, 21 and 24 October 1903, JJHP.
Nelson, Paris Gibson, and, to a lesser extent, Francis Newlands. Deadlock resulted, and, finally, in the spring of 1904 Congress "indefinitely postponed" the bills proposed by Hansbrough and Quarles.37

After 1902 Hill's hopes for national salvation through irrigation foundered. He believed that only intensively farmed, irrigated land could produce "one continuous village, with neighbors everywhere, and no incentive for the creation of vast centers that breed evils of their own." It would also maximize his railroad's revenue. But Hill's ambition of an irrigated West became increasingly frustrated. The National Irrigation Association failed to maintain its influence on federal policy after 1902, with the initiative moving to the western opposition. The inability of Hill and his allies to enact further legislation favoring small-scale settlement, compounded the slowness of the Bureau of Reclamation's work to irrigate Montana. In the years immediately following the Reclamation Act, Hill's optimistic conception of efficient federal irrigation and settlement foundered on political opposition and bureaucratic complexities.38

These factors, combined with the reluctance of farmers in North Dakota to embrace irrigation, pushed Hill to consider alternative ways to encourage a populated, agrarian West. Thus in 1905, he belatedly followed the lead of the Great Northern's sister railroad, the Northern Pacific, becoming involved in the dryland farming movement which offered an alternative method of establishing agricultural settlement on the arid plains.39

Although the Great Northern profited from transporting wheat from the Plains and Hill advocated increased wheat production to match anticipated population growth, he initially had reservations about the dry farming movement. Needing stable, productive agriculture, not just land sales, to make profit on his railroad, he hesitated to invest in a potential dryland farming bubble. Additionally, dry farming tended toward extensive

38. James J. Hill, Speech at National Irrigation Congress in Portland, Oregon, 1905, LWHP.
monocropping, which rested uneasily with a man devoted to intensive diversification. But, after 1905, the stalled status of federal irrigation combined with other railroads' successful boosting of dryland farming, altered Hill's perspective.

Hill's increased interest in dryland farming resulted from a pragmatic assessment of irrigation progress, but his strategies of promotion remained the same. As with irrigation, Hill utilized the expertise of others to compound his own. The involvement of state experiment stations in dryland farming lent scientific validity to the movement through their research. While continuing to believe in his own claim to expertise in agriculture through practical experience and business success, Hill valued the professionalization of farming by university personnel. The endorsement of academic expertise gave the concepts of dryland farming the additional validity which Hill recognized that he could not provide. Grounding his authority in the old concept of a gentleman farmer, he nevertheless thought that Progressive notions of scientific research and farming would uphold, not undermine, his ideologies and prominence.

The Great Northern's first involvement with practical dry farming experimentation came through its sister railroad, the Montana experiment station, and the USDA. In the fall of 1904 Thomas Cooper, land commissioner of the Northern Pacific, wrote to the agricultural college at Bozeman, noting that the successful wheat growing in eastern Washington took place in an area with less rainfall than eastern Montana. Cooper also approached the USDA and asked for cooperation in the problem of dry farming. In February of the next year, Cooper met with Elwood Mead of the Irrigation Division of the USDA and Professor Frederick B. Linfield, director of the Montana Agricultural Experiment Station. They decided to establish four demonstration farms in Montana at Helena, Dillon, Miles City, and the station north of Glendive. The Northern Pacific contributed twenty-five hundred dollars to this work, and the USDA and Montana Agricultural Experiment Station gave a thousand dollars each. 40

The next year the USDA ceased its involvement in the program, having established its own Office of Dry Land Agriculture under Ellery Channing Chilcott, formerly of the South Dakota Agricultural Experiment Station. This office gave the USDA autonomous control over dryland farming investigations, which proved important when conflict erupted, notably in Utah, over relative state and federal jurisdiction. The Utah Agricultural College had the most advanced dryland farming investigations in the arid West. In 1905, Walter Jasper Kerr, the college president, obtained a ten thousand dollar state appropriation for irrigation and dryland farming investigations subject to a like appropriation from the federal government. Mead at the USDA insisted that all work, except at the agricultural station itself at Logan, be under his control. Kerr fought for equal jurisdiction for the college. Linfield, having taught at Utah for nine years before moving to Montana, was very interested in, and apprised of, this argument. To avoid similar problems, he chose to circumvent the federal government altogether, approaching the railroads directly and arranging for financing for continuing research.41

In 1906 the Montana Agricultural College and the Northern Pacific discontinued the stations at Helena and Dillon because they were too far from the railroad. Work at Miles City also stopped as the expert in charge, W. W. McLaughin of the Utah Experiment Station, judged it to "be a waste of time." Instead, the Northern Pacific sponsored three stations in Montana, north of Glendive, near Forsyth, and north of Billings. The same year the Great Northern, at the instigation of Linfield, committed two thousand dollars to maintain three dry farming stations along its lines, 640 acres north of Harlem, 100 acres near Shelby, and 40 acres near Great Falls.42

42. Cooper to Linfield, 1 February 1906, MSU; Linfield, "Dry Farming in Montana," 13-14; B. Campbell, Fourth Vice President, to L. W. Hill, 10 March 1906; W. W. Broughton, General Traffic Manager, to L. W. Hill, 26 December 1907; anon., "Co-operative Work in Dry Farming in Montana," n.d., GNRP.
The Harlem station was an exercise in cooperation. Congress authorized the use of a section of land for ten years, and the Great Northern donated transportation for men and equipment involved in the work. Neither agency, however, could overcome some of the inherent difficulties of the site. The land was at a considerable distance both from the town and from water which exacerbated the problems of dryland farming. The isolation of the site allowed range cattle and horses to damage the crops before fencing could be constructed. Grassroots help ultimately proved vital in establishing this station as local town people did what they could to help. During the first season, they built a house on the farm, fenced the land, and drilled a well. The first year of Great Northern involvement saw some successful grain production, and samples of grain from all three sponsored plots were exhibited at the Montana State Fair.

The decision of the USDA to end its involvement in dryland farming investigations in Montana created a gulf between its personnel and those of the experiment station and railroad. Collaboration had hidden conflicts over authority and expertise which, now exposed, added to the confusion surrounding the viability of dryland farming. Aware of the problems in Utah, Linfield had been careful to prevent the USDA from trespassing on his authority. However, the Montana Agricultural College, largely financed by the state and aware of the tremendous political power of the railroads, had to please its constituents. The USDA, on the other hand, with a broader audience and wider financial base, could afford to be more objective, and consequently reticent, in this matter.

Not dependent on the railroads, or other outside interests, for funding, USDA personnel could voice their concerns regarding promotion and research with impunity. In response to inquiries about dryland farming statistics from a Great Northern immigration agent, Chilcott expressed many of his nascent concerns. He believed that the Great Plains had undergone a period of "abnormal rainfall for the last three years," and that this, rather than any "so-called methods or systems of dry land farming" had caused the crop improvement. He expressed concern regarding the promotion

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43. Linfield, "Dry Farming in Montana," 14; anon., "Co-operative Work in Dry Farming in Montana," n.d., GNRP; B. Campbell to L. W. Hill, 23 August 1906, GNRP.
of dry land farming being undertaken by the railroads. "I would say that many of the articles that have appeared in magazines and other publications concerning the possibilities of dry land agriculture are wildly exaggerated."^44

The Montana Agricultural College's railroad funding colored scientific assessments of dryland farming. The college publications of this time optimistically advocate dryland farming techniques. Financial need, as well as determination to assert his independence from federal overseeing, temporarily trapped Linfield and his staff in subordination to the railroad's research agenda, blurring the objectivity of their science.^45

As regards his involvement in the agricultural development of the Great Plains, Hill initially channeled his efforts primarily into various irrigation schemes. His emphasis on irrigation remained strong as late as 1904 when he stated that all the land in Montana, cultivable without irrigation, had been claimed. His caution with respect to dry land farming can also be linked to the Great Northern, because of its lack of land grants, requiring successful development of land and not just the initial attraction of settlement and land sales, to make a profit. In addition, incorporating dryland farming, with its emphasis on large-scale, monocropping, into Hill's "gospel of the small farm," proved difficult.^46

The slowness of the Reclamation Service in embarking in projects of particular concern to Hill combined with his alienation from federal power, forced him to reconsider the possibilities inherent in dryland farming. By the beginning of 1907 the Great Northern, along with the Northern Pacific, had thoroughly committed to a program of research and promotion of dryland farming on the benchlands of Montana. In keeping with his other agricultural enterprises of this time, Hill and the Great Northern invested money but left the type and direction of research to the scientists at the agricultural college. The arrangement seemed to work well but, as early as

^44. E. C. Chilcott to C. W. Mott, 30 November 1906, MSU.
^45. For example, F. B. Linfield and Alfred Atkinson, "Dry Farming in Montana."
1906, Chilcott’s warnings foreshadowed a potential division between the corporation’s desire for quick settlement and production and the academic community’s concepts of research and proof.

Hill did not limit his cooperation with academic institutions to the Montana Agricultural College. He and the Great Northern also helped the North Dakota Agricultural College reach the farmers of their state and transmit the foundations of scientific agriculture. Throughout the early years of the century the railroad transported groups of farmers gratis to visit the college in Fargo. Unlike the Montana school, however, the North Dakota Agricultural College refused to actively investigate either dryland farming or irrigation for arable production, preferring to focus on identifying suitable crops and crop rotations for the state. This alienation from the prime interests of the Great Northern strained relations between the two organizations somewhat.47

Divergent experimental interests aside, the North Dakota Agricultural College personnel generally assumed a more suspicious approach to the railroad than their peers in Montana. Much of this difference stemmed from the different perceptions of the leaders of the two institutions. Linfield in Montana had trained in Guelph, Canada, under Thomas Shaw at the Ontario Agricultural College. He was, thus, part of a Canadian network of ideas and heritage. The involvement of his old mentor in dryland promotion helped make it more accessible and acceptable to him. President John H. Worst of the North Dakota Agricultural College, on the other hand, proved perennially suspicious of railroads. Early on he assumed an activist stance, trying to break the railroads’ hold on farmers by recasting the oft-touted cry of interdependence. At a speech at the college in 1907 he stated, “We owe much to the railroads and to other forms of corporate wealth, but they owe more to us. We could live without them, but they

47. C. H. Honey to Hill, 21 July 1902 and 23 July 1903; “Resolutions,” n.d., GNRP; Hafermehl, “To Make the Desert Bloom,” 27; Linfield to Cooper, 5 April 1909, MSU; Seventeenth Annual Report of the North Dakota Agricultural Experiment Station, Agricultural College, North Dakota, to the Governor of North Dakota, 1907 (Fargo: Walker Bros. & Hardy, 1907), 14, 66-89.
cannot do business without us. Our interests at least should be mutual and not one sided, and not on their side at that."

This pro-farmer political activism, which often manifested itself as anti-railroad, continued throughout his life. Participating fully in the Nonpartisan League uprising in North Dakota starting in 1915, Worst advocated state-owned terminal elevators and became commissioner of immigration under the new, radical state government.

In 1906 the Great Northern and the Northern Pacific financed work on six demonstration farms in North Dakota. The railroad paid farmers to cultivate five four-acre plots on their farms in accordance with the directions of E. G. Scholander of the agricultural college. Although similar in method to the dry farming work in Montana the focus was somewhat different, the objectives being "to determine, what method of crop rotation is best adapted for that particular neighborhood, to introduce field corn and clover into the fields, to build up the fertility of the soil, instead of summer fallowing, and by extra tillage preserve the moisture and clean the land." This tied in with Hill's agricultural aims; feed for livestock, crop rotation, and fertility being prime concerns.

Despite this cooperation, relations between the railroad and the college were never close. Worst resisted corporate dominance in earlier years although his antagonism became more pronounced over time. In 1905, Louis Hill, by then a vice president of the Great Northern, became concerned when he discovered that the North Dakota Agricultural College had run an agricultural train in conjunction with the rival Soo line. Worst justified the action as in response to crop failures along the line the previous year, and pointing out that similar failures had not occurred along the Hill lines. Louis did not believe this explanation but instead saw a conspiracy to decrease the Great Northern's power in the state.


50. Seventeenth Annual Report of the North Dakota Agricultural Experiment Station, 14, 66-89.
am more inclined to think that Pennington [president of the Soo line] is trying to get a foot-hold in North Dakota politics and has been cultivating the Deputy Commissioner of Labor and Agriculture, Kaufman, of Bismarck, and that Worst is very willing to fall in line.°

Louis Hill thought Worst nursed a grievance against the Great Northern because of the railroad's continual delay in building a promised spur to the college heating plant. The supposition proved insightful. When accused of favoritism, Worst expressed surprise, suggested that the Great Northern run an agricultural train in conjunction with the college, but then raised the issue of the spur. After the railroad completed the spur in 1906 the agricultural college cooperated with the railroad in its "Good Seed Specials" which toured Minnesota and both Dakotas.\[^{52}\]

The Good Seed and Soil Specials ran in the spring of 1906 covering nearly two thousand miles. The trains carried academic agricultural experts selected by James J. Hill, including Perry Holden, professor of agronomy at Iowa State College. Holden, who participated in the Corn Gospel trains in Iowa in 1904 and 1905, promoted the careful selection and testing of seed. Later he researched corn hybridization, more often associated with the Wallaces, founders of Pioneer Hybrid and editors of Wallace's Farmer.\[^{53}\]

Also on the trains was Thomas Shaw who, at this point, worked for both the Great Northern and the Northern Pacific as well as writing for the Orange Judd Farmer. Born in Woodburn, Ontario, of Scottish parents, Shaw spent his early career at Ontario Agricultural College at Guelph, before accepting the chair of animal husbandry at the University of Minnesota. Here his interest in cattle feeding led him to investigate potential forage

\[^{51}\] L. W. Hill to B. Campbell, 3 and 17 April 1905; Campbell to L. W. Hill, 14 April and 1 May 1905, GNRP.

\[^{52}\] John Henry Worst to Hill, 9 June and 19 September 1902; Secretary to the president to Worst, 12 June 1902; Jonathan Stevens to L. W. Hill, 13 September 1902; L. W. Hill to Worst, 18 September 1902; Campbell to L. W. Hill, 1 May 1905; F. E. Ward to L. W. Hill, 16 May 1905; L. W. Hill to F. E. Ward, 18 May 1905, GNRP.

\[^{53}\] Campbell to L. W. Hill, 29 March 1906, GNRP; Iowa State Register, 12 May 1905; Roy V. Scott, Railroad Development Programs in the Twentieth Century (Ames: Iowa State University Press, 1985), 40.
crops and drought resistant plants, and he published three works on forage crops in the late 1890s.54

Hill's Canadian network pivoted on Shaw. Meeting each other first in Minnesota around the turn of the century, they developed a friendship based on their common heritage and interest in agriculture. Long before Hill officially employed Shaw the latter's ideas reinforced Hill's own, and he acted as "a sort of agricultural explorer to report on the future development of agriculture in the undeveloped regions." The respect Shaw gained in academic circles in America reflected on Hill, lending his ideas scientific credibility.55

Shaw's research on forage plants led him into dryland farming investigations. In 1899 the Regents of the University of Minnesota received a letter from Vermilion, South Dakota, asking for Shaw to supervise experiments at Highmore Drouth Resisting Forage Station, "Because of the wide experience of Professor Thomas Shaw . . . in this work, and because of the success which he has achieved at the Minnesota University experimental station, and of his interest in . . . growing these crops, it is our judgement that no one in the West is better fitted to supervise such additional experiments." Shaw complied. In 1902 Shaw resigned from the University of Minnesota to assume the editorship of The Farmer in St. Paul before moving to The Dakota Farmer and railroad employment. The Great Northern did not put Shaw to work directly on the questions of dry farming, his first official involvement with the line being on the demonstration trains of 1906.56

The use of informational trains probably started in 1891 when the Agricultural College at Guelph, Ontario, sent two lecturers out on a wagon. As Hill's friend Shaw came from that college, the launching of Great Northern trains reflected the influence of his Canadian network. Hill also

55. R. S. Shaw, Thomas Shaw's son, to C. A. Franzman at the University of Minnesota, n.d., Thomas Shaw Biography file, Institute of Agriculture Files, UMA.
56. Vermilion, South Dakota to Board of Regents, 1 December 1899; Thomas Shaw Biography file, Institute of Agriculture Files, UMA.
could have been following the lead of the Burlington which launched informational trains in four states in 1904. In addition, the presence of agricultural trains in North Dakota run by the competitive Soo line added incentive.  

The experts on the trains gave talks on how to select good seed grain for themselves, the way to treat the grain to prevent smut and other diseases, and the importance of rotating crops and maintaining soil fertility. Over ten thousand farmers attended the trains' presentations, which compared favorably to similar trains run by the Canadian Pacific and Northern Pacific. The total cost of the enterprise was $1,879.21.

Hill utilized the trains to promote his vision of the small-scale family farm and diversified agriculture. One of the problems facing stock farmers in the northern Great Plains was winter feed. In more temperate areas such as Iowa, corn worked very well as a high calorie, nutritious feed, but in the early years of the twentieth century corn was a risky crop in the Dakotas and Montana, often failing to ripen.

In 1905 Hill pursued the problem of feed on a personal level, starting his first major experiment unconnected to stock rearing. His friend, Frank Sturgis of Round Hill Farm, Fairfield, Connecticut, wrote to him about his "flint corn" which he claimed matured in nine weeks at forty to fifty bushels per acre, or 50 percent more than the average yield for Iowa farmers at the time. Hill acquired some seed for North Oaks and Humboldt and, following his speech about the corn at the North Dakota State Fair in 1905, he received letters from various educational institutions requesting some of the corn.

Hill distributed the corn throughout Minnesota and North Dakota, using the Good Seed Specials as part of the distribution mechanism. Shaw took the corn and growing information out to the farmers. The corn had

58. Campbell to L. W. Hill, 29 March 1906, GNRP.
59. Despite the engineering of hardy hybrids, corn is still a difficult crop to grow in the upper tier. In Montana, for example, in 1995, only sixty thousand acres of corn were grown, all in the extreme south of the state. By comparison, farmers grew over five and a half million acres of wheat. *Montana Agricultural Statistics Bulletin, 1995* (Helena: State Department of Agriculture, 1996).
60. North Oaks Experiment File, 13 and 18 April 1905, North Oaks Papers, JJHP.
been named "Jim Hill corn" to associate it with the virile western agricultural image the railroad man had engineered for himself. A letter from Andrew Boss at the St. Paul Experiment Station to Hill's personal secretary John J. Toomey shows a willingness to help with the project. The university, he said, would distribute ten bushels to farmers for experimentation, but would also keep enough at the Station to maintain a pure line. A note on the letter listed the people to receive the corn. Dean Liggett at the University ten bushels, Worst at the North Dakota Experiment College one bushel, Shaw for the Good Seed Special one bushel, North Oaks twelve bushels, Humboldt half a bushel.\textsuperscript{61}

The corn was a disaster. Letters from the farmers who tried it, either from the university or from "The Good Seed Specials," stated that it matured late (if at all, frost ruined some crops), it was too hard for cattle or horses to eat, and even Dent corn matured earlier. At the North Dakota Agricultural College "six varieties of corn . . . were planted. . . . When the first freezing weather came in the fall from 90 to 95 percent of all the corn had fully ripened with the exception of the Hill corn."\textsuperscript{62}

The failure of Jim Hill corn demonstrated to university agriculturists Hill's amateur status with regards to scientific farming. Jealously guarding their newly won professional provenance, academics were wary of Hill's claim to expertise. Based on experience and money, Hill's authority represented for them an antiquated, and therefore dangerous, approach to improving agriculture. Ideologically, their stand asserted that objective experiment, not financial investment or practical experience, would enhance agricultural productivity. At this time agricultural scientists had not yet solidified their legitimacy and authority to dictate the future of American agriculture. Their expertise remained contested by small-scale farmers who, consciously or otherwise, recognized the inherent threat to their livelihood embodied in the promulgation of a capital- and technology-intensive agriculture. In

\textsuperscript{61} Dickman, "James Jerome Hill," 91; Andrew Boss to Toomey, 26 February 1906, North Oaks Experiment File, North Oaks Papers, JJHP.

\textsuperscript{62} Corn Experiments file, 1905; J. H. Shepperd of the North Dakota Agricultural College, to John J. Toomey, 13 November 1906, Corn Experiments file, North Oaks Papers, JJHP.
attempt to assert their dominance, these university experts opposed all other forms of agricultural knowledge, including Hill's.63

Professors at the University of Minnesota already viewed Hill's expertise askance. Their distrust stemmed partially from embarrassment over the waterlogged Crookston experiment station, and partly from their rejection of Hill's advocacy of dual-purpose cattle during the last decades of the nineteenth century. The debacle of Jim Hill corn only further alienated collegiate institutions from Hill and his agricultural plans, but this break was far from complete. The Montana Agricultural College still cooperated with the railway in its dry farming demonstrations, and no university within the northern tier could afford to completely antagonize the president of the Great Northern Railway.

The increasing suspicion with which academics viewed Hill mirrored his growing disillusionment with institutional agricultural development. Dissatisfaction with the Reclamation Service and research adopted by the North Dakota Agricultural College, shook Hill's conviction that institutional cooperation would facilitate farm improvements. Although not completely abandoning cooperative ventures, Hill became more circumspect in his choice of partners and once more launched some independent programs.

In late 1905 Thomas Shaw, then northwestern editor for The Farmer, still published by the Orange Judd Company under the presidency of Herbert Myrick, wrote to Hill about a farming contest that the paper intended to run. Shaw wanted to offer prizes for five consecutive years, aiming to improve cultivation techniques and wheat production. Hill expressed interest in this plan and, by early 1906, had agreed to provide the prize money. The competition covered the congressional districts of Minnesota and the Dakotas and first prize in each district was three hundred dollars.64

Hill's involvement was contingent on certain changes in the contest's rules, including a stress on livestock. As he said two years after the


64. Thomas Shaw to Hill, 5 December 1905, GNRP.
competition, "I stipulated that a man, in order to be entitled to compete, should have twenty head of live stock for breeding purposes." By the time the paper published the criteria for the contest, they looked like a list of Hill's personal concerns for agriculture. In addition to number and quality of livestock, the judges considered rotation of crops for soil fertility and good yields, drainage, and fertilizing techniques.65

The Good Seed Specials and The Farmer publicized the contest and the latter also did the paperwork. The judges were Shaw and Torger Hoverstad. Shaw had wanted to continue the contest annually, pending success in 1906.66

The competition had limited success. Out of five hundred farms which entered, only a hundred had sufficient livestock to be considered. The contest thus affected only the few farmers already practicing scientific agriculture. It was a case of preaching to the converted. One of the winners, D. Tallman, of Willmar, Minnesota, exposed this dilemma in a letter to Hill thanking him for a first prize. The award, he said, "compensates one for the work they have been doing along lines in an agricultural way so different--in this instance--from my neighbors." As Hill's failure to influence general farmer opinion became apparent, the contests ended after the first year. Once again Hill's personal attempts to change farming practices fell flat.67

Moving from the euphoria of 1902, Hill found the delays in starting irrigation works, the continued stress on wheat production throughout the Northwest in the early years of the century, and conflict with academic institutions, worrying. In part he expressed his concern by stressing the need to broaden the export markets for America's agricultural products, but he also started prophesying a Malthusian vision of an America unable to feed itself. He wanted production levels to remain high through exports to prepare for the massive population boom he foresaw. Hill was not alone in

66. Shaw to Hill, 22 January 1906; Clarence A. Shamel [sic] to L. W. Hill, 9 March 1906, GNRP; Farmer, 17 November 1906.
67. Farmer, 17 November 1906; D. K. Tallman to Hill, 5 December 1906, General Correspondence, JJHP; St. Paul Dispatch, 15 November 1906.
his pessimistic predictions. Many economists saw an increasing population
not matched by expanding farm acreage and predicted disaster.\textsuperscript{68}

Hill argued that emigration of American farmers to Canada compounded
the decline of wheat production in the United States. This necessitated a
continuation of the extensive farming practices which, in turn, resulted in
a draining of soil fertility and a decline in production. As American
farmers moved north, more immigrants flooded the nation's cities. Thus
Hill predicted that "It is a mathematical fact that within twenty years
under present conditions our wheat crop will not be sufficient for home
consumption."\textsuperscript{69}

Hill offered a three-pronged solution: a national recognition of the
importance of agriculture; an increased concern to conserve and wisely use
farming resources such as the soil, and the maintenance of American
production levels through development of new international markets. As he
said, "There must be a national revolt against the worship of manufacture
and trade as the only forms of progressive activity. . . . A clear
recognition on the part of the whole people . . . that the tillage of the
soil is the natural and most desirable occupation for man." In addition to
a grassroots change, Hill prescribed an increase in government involvement
and expenditure in agricultural education, promoting intensive farming.\textsuperscript{70}

For Hill, this Malthusian vision of America's future centered around
the waste of the soil, which he considered, "the sole asset that does not
perish," capable of "infinite renewal." Through poor farming practices
including monocropping and a failure to fertilize the American farmer was
destroying this perpetual resource. Thus, as early as 1903, Hill became
interested in the issues surrounding soil conservation and fertility, an
interest which naturally sprung out of his push for diversification and the
decline in American productivity.\textsuperscript{71}

Hill became increasingly concerned about the decline of production of
American farms. Using production statistics to prove his case, he claimed

\textsuperscript{68} Hill, \textit{Highways of Progress}, 5; Charles A. Dalich, "Dry Farming
Promotion in Eastern Montana, 1907-1916." (M.A. thesis, University of
Montana, 1968), 21-25.
\textsuperscript{69} Hill, \textit{Highways of Progress}, 38, 50.
\textsuperscript{70} Ibid, 40-41.
\textsuperscript{71} Ibid, 15; \textit{Proceedings of the First State Irrigation Congress
Held at Bismarck, N.D., October 20th and 21st, 1903}, 21-22.
that bad farming practices had resulted in a decline of wheat production in the West from twenty to thirty bushels per acre to twelve. Hill's consistent use of numbers in his speeches reflected his commitment to Progressive notions of science, objectivity, and proof. Perhaps, more importantly, it reinforced his expertise. By employing a standardized and objective referant, such as numbers, Hill removed his knowledge firmly from matters of personal interests and prejudices into an abstract, impersonal sphere.72

Developments in international markets heightened Hill's gloomy view of his nation's population growth in relation to its productivity. America sold much of its surplus wheat to the British Empire. In 1902 Joseph Chamberlain, England's Colonial Secretary, sought to revive an Empire struggling from the effect of the Boer War, and his own political fortunes, by advocating tariff reform. The reform he proposed centered around reciprocal imperial preference whereby a protective tariff wall would foster inter-empire trade by placing taxes on goods from other nations. This would make American grain uncompetitive on the English market in comparison with that of Canada. Launching his proposal in a speech in Birmingham in May 1903, Chamberlain plunged England, where many had long favored free trade, into political turmoil and created fears for international markets around the world. These concerns did not abate until the dramatic end to Chamberlain's political career following a stroke in July 1906.73

Hill, very aware of Chamberlain's push to institute a protective tariff on non-imperial goods coming into England, gave a speech in 1904 at the Minnesota state fair which illustrated his concern. If instituted, Hill claimed, this tax would cost Minnesota and the Dakotas twenty to thirty million dollars a year. The solution, as he saw it, lay in expanded

73. This situation continued, with England buying an average of 23,353,000 dollars of wheat from America in 1912 to 1914 as compared with 3,473,000 dollars' worth bought by France and 5,762,000 dollars' worth purchased by Japan. Trends in the Foreign Trade of the United States (New York: National Industrial Conference Board, 1930), 29, 31, 116; Denis Judd, Radical Joe: A Life of Joseph Chamberlain (London: Hamish Hamilton, 1977), 237, 263-64, 244-72.
trade with Asia, especially China. This trade would enable America to maintain its export market for wheat regardless of the actions taken by the British Empire. Hill believed “that every nation, including India, once they get wheat flour, prefer it to all other food.” Thus Hill used the threat of Chamberlain’s tariff to return to his old hobbyhorse of Asian trade.74

Hill’s desire to establish this trade with Asia, extended beyond speeches and promoting westward freight on his lines. He commissioned the construction of two oceangoing liners, built at Groton, Connecticut. The S. S. Dakota was launched in February 1903, and her sister ship, the S. S. Minnesota, in April. Within two years, both ships regularly traded with Japan and Hong Kong. In their day they were the largest ships ever built in America, the largest under the United States flag, and the largest trading in the Pacific. Despite their monopoly on size, the vessels failed to be profitable. Underpowered and difficult to handle, they lost money on every voyage. In March 1907, the S. S. Dakota sunk one mile out of Yokohama on a well-charted reef with no lives lost. Hill tried to sell the S. S. Minnesota in 1908, but did not find a buyer until 1915.75

Again, Hill proved unable to independently launch an agricultural development program. Despite his fervent belief in the necessity of Asiatic trade, his shipbuilding ability fell far short of his talent for railroad construction. Part of the problem lay in federal reluctance to encourage American shipbuilding. In the late nineteenth century America turned its attention toward internal improvements, investing in railroads and industrial developments. Although building his railroad without government land grants, Hill could not rescue American shipbuilding from its Postbellum decline, which many recognized but did little to resolve until the impetus of world wars.76

74. Havre (Mont.) Plaindealer, 20 February 1904.
Hill failed to see the changes he had anticipated in agriculture in the early twentieth century. The Newlands Act, which had been such a triumph in 1902, proved to be slow, ineffective, and bureaucratic. Problems with international water rights delayed construction in the Milk River Valley, and farmers in North Dakota did not display the necessary interest to encourage federal spending. Frustrated, Hill launched a program of investigation into dryland farming in conjunction with the Montana Agricultural College. By 1907, this too, became problematic, with its very optimistic results being questioned by USDA officials.

Other agricultural efforts that Hill ran personally or through the railroad were no more successful. The Good Seed Specials attracted attention, but were not repeated until the 1920s, while his contest reached only those farmers already practicing diversified agriculture. Consequently Hill became increasingly pessimistic in his view of the future of American agriculture. He seemed unable to persuade farmers of the need for change. Hill thus started to present a gloomy picture in his agricultural speeches, foretelling a time in the not too distant future, when America would be unable to feed itself.  

In 1907 James Hill retired as president of the Great Northern turning the post over to his second son, Louis Hill. James instead took on the position of chairman of the board. If anyone thought that this would usher in an era of lesser involvement by the elder Hill, they were wrong. He kept a tight hold on the reins of power, directing the railroad, and its agricultural enterprises, through his son and feeling quite at ease overriding Louis when necessary. Increasingly frustrated with institutional involvement, James Hill directed his energies toward expanding corporate agricultural promotion and attempting to bully federal and state agencies into creating the type of farming he envisioned for the northern plains.

In 1907 Hill resigned as president of the Great Northern in favor of his son Louis. Although still chairman of the board and still maintaining a close watch on operations, Hill removed himself from much of the day-to-day running of the railroad. Hill invested much of his newfound free time in promoting agricultural development of the Northwest. Now in his sixties, Hill devoted energy to his vision of a settled, agrarian northern tier with continued emphasis on irrigation and dryland farming. His concern for soil fertility propelled him into federally driven conservation efforts. Hill's second son, Louis, aided and abetted him in all of these activities.

Continued exposure to governmental action and expertise during the five years from 1907 to 1912 increased Hill's frustration with bureaucratic inertia and highlighted the gulf between governmental and corporate perceptions of western agricultural needs. As federal bureaucrats and experts solidified their control over public land management and consistently ignored criticisms from Great Northern personnel, corporate tactics shifted. Returning to political lobbying, the Hills favored state rather than federal control over western resources. They hoped this would better foster their needs and reassert the Great Northern's influence.

The nation enjoyed a period of prosperity. Internal political unrest had been largely left behind with the old century; prices were high and crops bountiful. Internationally, Roosevelt launched his corollary of the Monroe Doctrine, to many asserting America's rightful place in international affairs. Faith in Man's abilities and the potential of reason to cure all ills reached center stage as the federal government embraced Progressivism.

In keeping with the times, the Great Northern flourished. By 1907 it had purchased the assets of all fifteen of its affiliated companies. Thus it avoided the creation of an illegal holding company, forming instead a corporate giant. The railroads operated efficiently and effectively, increasing haulage capacity and lacing the Northwest with new spur lines. Railroad promotion of settlement in Montana began in earnest in 1908. Remarkably successful, the number of farms in the state nearly doubled.
between 1900 and 1910. Hill remained actively involved in the road, but his empire was complete and would prove hard to undermine.\textsuperscript{1}  

With more time to spend on his interests, Hill played the role of agricultural expert with new zeal. The prominence of his line in the northern tier, combined with Hill's carefully crafted public image, had elevated him to celebrity status. With his retirement, he expanded his public visibility, accepting a larger proportion of speaking invitations. He spoke at most of the county fairs along his line and at many others. His arguments did not change. For the good of the farmers and the nation, Hill contended, agricultural practices had to improve. Only by following the precepts of "high grade farming," such as intensive agriculture, diversification, and soil conservation, could farmers continue to feed the growing American population.\textsuperscript{2}  

Hill's agricultural interests during these years continued to embody his belief in the small-scale family farm. He agitated for effective irrigation by the federal government to facilitate the creation of intensively farmed smallholdings in the arid West. He also persisted in his advocacy of diversified farming and the need for soil conservation through fertilization. By 1908 he found a new forum for these longheld beliefs with the conservation movement, ironically led by his old foe, Theodore Roosevelt and Roosevelt's friend Gifford Pinchot.  

Although his railroad continued to fare well, Hill's agricultural enterprises did not. Already somewhat disillusioned with federal and university experts, his lack of faith grew from 1907 to 1912. Distrust became antagonism and even outright opposition. Concurrently Hill found himself implicitly thrust in the position of having to justify his right to criticize these experts. Borrowing much from his earlier experiences as a gentleman farmer, Hill refined his notion of personal expertise, using the


\textsuperscript{2} Chicago Daily Tribune, 16 September 1909.
railroad and a group of sympathetic college men to expand and solidify his position.

Hill's relationship with mainstream conservation broke down after a brief honeymoon in 1908 as he discovered that, as with irrigation, federal control of land policy undermined his corporate influence. This schism mirrored the national fracture between President William Howard Taft's new Secretary of the Interior, Richard Ballinger, and Pinchot, who remained Chief Forester. Hill had peripheral importance in this swirling, political and ideological controversy, finding himself on the losing side of a battle not of his own making.

Pinchot, who had largely controlled all of the Roosevelt administration's public land policy from his position in the Bureau of Forestry, enjoyed strong federal bureaucratic control over natural resources in the West. Seeing resources as assets to be rationally harvested, Pinchot believed federal management necessary for the nation to garner the greatest good for the greatest number. Consequently, he proposed legislative changes which increased the federal government's power in determining and policing the use of the public domain. Simultaneously, he developed systems of education and credentials which facilitated the creation of an elite body of federal experts. Pinchot's vision of Progressive conservation was augmented by the unswerving support of President Roosevelt which gave him almost dictatorial powers, and the presence of many likeminded men, notably Frederick Newell of the Reclamation Service, in other branches of the bureaucracy.  

The election of Taft in 1908 undermined Pinchot's dominance. Taft appointed Richard Ballinger, a Seattle lawyer and one-time Commissioner of the General Land Office, as Secretary of the Interior. Ballinger disagreed with Pinchot's land policy, not so much on ideological grounds as on practical issues of management. Ballinger wanted a lessening of federal control in the West and an increase in private enterprise. Pinchot, who had been used to his vision dictating the actions of the Interior

Department as well as the USDA, saw in Ballinger the undoing of the Bureau of Reclamation.4

The political squabble which followed muddied everyone involved. Ballinger and Pinchot both fielded an army of subordinate spies. Taft vacillated, failing to offer clear support to either party or to discipline anyone. In 1909 Pinchot stepped outside bureaucratic channels and used the media to accuse Ballinger of illegal mismanagement of Alaskan coal lands. This obvious breach of policy forced Taft to action, and he fired Pinchot in January 1910, but the storm continued. Congress, upset earlier by Pinchot and Roosevelt's highhanded executive style, held hearings to investigate the actions of both men and their bailiwicks. Although the commission formally exonerated Ballinger of all charges, he resigned the following year due to Taft's refusal to allow him to move the Interior Department fully away from Pinchot's concepts of resource management.5

The national debate on the nature of resource management engulfed Hill and his railroad, pivoting, as it did, around irrigation and conservation. More importantly, the controversy raised the question of who should determine resource management. Having initially pushed for federal involvement in irrigation, Hill increasingly found his own power undermined by bureaucratic experts. In response, he supported Ballinger's advocacy of a larger degree of state and private control in the development of western lands hoping that this would restore his influence.

Having unambiguously supported the lobby for federal irrigation, Hill found that the Reclamation Service completely usurped his power to affect change. As the Newlands Reclamation Act approached its tenth anniversary, James and Louis Hill's dissatisfaction with the Reclamation Service increased. They were not alone. Federal reclamation progressed slowly, largely due to unpredicted costs, and often stalled altogether. This heightened local frustration with the Service as it withdrew land indefinitely from the public domain for reclamation. With the delay of irrigation plans, the land often became unobtainable, unusable, and remained unirrigated. Sometimes the public domain remained accessible and

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homesteaders staked claims with an anticipation of irrigation which remained unfulfilled.  

In addition to western discontent, some government officials complained at the cost of the projects, which federal personnel often underestimated. The Ballinger-Pinchot senatorial hearings of 1910 revealed that, out of thirty projects commenced, the Service had only completed two. One official of the Reclamation Service judged this "an inordinate and unjustifiable failure to produce results." The majority of the congressional committee ruled that "It would have been better if a less number of projects had been in process of construction at the same time, as more funds, more energy, and more speed could have been obtained in such case."  

In North Dakota the Buford-Trenton and Williston projects along the Great Northern continued to be underused as settlers proved reluctant to pay for water. Those who used the water judged the charges excessively high. By early 1910 settlers at Williston had organized a Water Users' Association and issued a statement listing grievances and proposed solutions. The cost of irrigation, they believed, was "excessive and . . . extravagant," being at least twice the estimate they had been given. They wanted the years 1908 and 1909 to be considered experimental with little or no payment required for the water "on account of the inability [of the Reclamation Service] to furnish water when necessary." They also recommended that all construction charges be postponed until 1913, by which time the settlers hoped to be benefiting financially from the irrigation. In addition they contended that, even if forced to sell their land, they would not realize enough money to pay the current debts to the Reclamation


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Service. The petition failed, and the Service refused to turn the water on until farmers had paid all back debts.8

The crop "fiasco" which ensued sent the association to Washington, D.C. and to James Hill for help. Louis Hill assured the settlers that their only hope lay in the Curtiss Bill then before Congress authorizing the Secretary of the Interior to negotiate new contracts, and urged the association to write to their congressmen. Louis also wrote his own letters to Congress and persuaded Northern Pacific personnel to do the same. Congress passed the Curtiss Bill in 1911 and the Service negotiated new contracts with the settlers and, although not exactly what they wanted, farmers received water for the 1911 crop year. Despite this temporary respite the Reclamation Service closed irrigation projects in North Dakota in 1915 because of farmer failure to pay charges.9

This failure of federal irrigation to operate in North Dakota as intended unfortunately compared favorably to the Reclamation Service's progress on James Hill's pet project, the Milk River Valley in Montana. Having withdrawn land from settlement and water rights from Montanans, the Service became bogged down in negotiating international rights with Canada. To pacify the settlers, the Service did construct the Dodson dam and canal between Havre and Malta, but these were useless without water. Aside from badgering the Service and congressmen, the Great Northern did little to rectify the situation. Negotiations with Canada continued and, ten years after the passage of the Newlands Act, none of the Milk River Valley had been irrigated by the Reclamation Service.10


10. A. P. Davis, chief engineer of the Reclamation Service, to L. W. Hill, 2 March 1910; L. W. Hill to Davis, 14 March 1910; to Thomas Carter, 7 February 1910, GNRP.
During the late summer of 1909 Louis took a trip along the Great Northern in the company of the Senate Irrigation Committee and reclamation engineers, both to assess the progress of irrigation and to conduct some grassroots publicity. During this journey he attended some local meetings held by the Reclamation Service. At these he "was greatly impressed with the fact that the people are very critical about and generally displeased with the reclamation service."\(^{11}\)

In fact, settlers complained so vociferously, especially regarding the delays in implementing projected schemes, that Louis proposed subcontracting several of the projects from the Service and having them completed by Great Northern engineers. He collected cost/acreage statistics for a variety of northern Great Plains projects and corresponded with irrigation promoter W. M. Woodridge in Montana. His proposal received endorsement from "settlers [who] think we [the Great Northern] could do it in one-half the time and at one-third of the cost." Several newspapers also promoted this idea of corporate intervention.\(^{12}\)

By early 1910 Arthur P. Davis, chief engineer of the Reclamation Service and friend of Newell, wrote to Louis explaining the international problems with water rights in the Milk River Valley. At the same time, Davis encouraged the railroad to construct canals so as to "expedite the ultimate irrigation of the valley." Alerted to these diplomatic problems, Louis quickly backed out, stating that the responsibility for irrigation lay with the federal government and that Great Northern personnel had merely been encouraging settlers in their territory to keep "alive to the situation... and keep after this subject until they get what is properly coming to them."\(^{13}\)

The Great Northern's frustration with the Reclamation Service heightened in 1909 with an unfortunate exhibit at the Minnesota State Fair. Edmund Taylor Perkins, engineer-in-charge and head of the Chicago office of the Reclamation Service and a strong ally of Ballinger, planned a publicity campaign to highlight Service activity and attract settlers to irrigated

\(^{11}\) Gilman to L. W. Hill, 7 October 1909; W. M. Woodridge to L. W. Hill, 13 November 1909; L. W. Hill to W. W. Broughton (with enclosures), 21 October 1909; to Davis, 26 February 1910; to Darius Miller, CB&Q, 17 September 1909, GNRP.

\(^{12}\) L. W. Hill to Miller, 17 September 1909, GNRP.

\(^{13}\) Davis to L. W. Hill, 2 March 1910; L. W. Hill to Davis, 14 March 1910, Ballinger Papers, UWA.
The campaign took the form of a black tent exhibit which toured various state fairs in the fall. In the tent, officials displayed illustrations of irrigation projects, gave lectures, and provided literature.

Perkins had approached a number of railroads, including the Hill lines, for help in financing the campaign, expressing concern that "all Reclamation Service projects be covered." The publicity issued by the Reclamation Service included railroad advertising. One of the Hill lines, the Chicago, Burlington & Quincy, declined the opportunity to participate, believing they "could get better results from newspaper advertising." Perkins took this rejection to include all the Hill lines, despite the assurance of the general traffic manager of the Great Northern, W. W. Broughton, that his line would participate. When the black tent show started its circuit in the fall of 1909, the entire cost of Perkins's project had been assumed by the Union Pacific.14

In September 1909 the Service set up the black tent show at the Minnesota State Fair, and Louis Hill stopped in to see the work. Furious to find only southwestern projects in territory of the Union Pacific advertised, he started a series of complaints to congressmen, such as Thomas Carter in Montana, and to Newell himself. Louis complained of Perkins's incompetence and ignorance in his belief that the Chicago, Burlington & Quincy could make decisions for the Great Northern. He suggested that only advertising those projects in the territory of an interested railroad was "illegal from the standpoint of discrimination," and he called for a complete reorganization of the Service. Perhaps to add substance to his complaints, Louis expressed his father's concern over the matter and the older Hill's demand that information be sent to President Taft. At Louis's instigation, the St. Paul Jobbers and Manufacturers' Association launched a simultaneous series of complaints about the geographical limitations of the black tent show. The association complained directly, lobbying federal officials and promoting a general

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14. Edmund Taylor Perkins to E. L. Lomax, Union Pacific, 9 August 1909; to P. S. Eustis, CB&Q, 10 August 1909; to A. M. Cleland, Northern Pacific, 21 September 1909; Eustis to J. S. Woodworth, Northern Pacific, and Broughton, Great Northern, 12 August 1909; Broughton to Miller, 13 September 1909; Miller to Broughton, 15 September 1909, GNRP.
regional grievance against the Reclamation Service, through local Minnesota papers.\textsuperscript{15}

Spurred by these two incidents, Louis further investigated the actions of the Reclamation Service. He discovered that Perkins made a personal profit from the publicity venture of the black tent shows. Louis asserted that this would not be tolerated in the railroad business and that "To me it appears an innovation that a salaried Government man should engage in outside matters in which the Government is involved securing profit to himself through the operation." Louis' accusation of vested interest struck at the very heart of ideal civil service and impartial government; supposedly an hallmark of Progressive land management.\textsuperscript{16}

Louis also took the matter up with Newell, asking for Perkins' resignation or threatening to "put the whole matter before the Press." In their defense Newell and Perkins claimed that the Service had not neglected northern irrigation projects, but represented them with slides and pamphlets. Again they raised the fact that the Chicago, Burlington & Quincy had declined involvement on the part of all the Hill lines.\textsuperscript{17}

Louis Hill informed the Minnesota State Fair organization of the involvement of the Union Pacific in the exhibit. The fair association had waived the fees for Perkins's black tent space on the basis of federal involvement. On hearing of the corporate contributions to the show, the secretary of the fair association, Mr. Beek, demanded the requisite one hundred and fifty dollars, payable by all private organizations. He also complained that the visitors had been misled and that they "had a right to know with whom they are dealing, whether the Government, in the exercise of a government function, or a private corporation promoting its own

\textsuperscript{15} Senate, \textit{Investigation of the Department of the Interior and of the Bureau of Forestry}, p. 1796-1800; L. W. Hill to Thomas Carter, 16 September 1909; to Miller, 17 September 1909; Circular issued by the St. Paul Jobbers and Manufacturers' Association, September 1909; C. L. Kluckhorn, president of the St. Paul Jobbers and Manufacturers' Association, to Perkins, 27 September 1909, GNRP.

\textsuperscript{16} L. W. Hill to Kluckhorn, 25 September 1909, GNRP.

\textsuperscript{17} Ibid; F. H. Newell to Thomas Cooper, Great Northern, 28 September 1909; Perkins to Broughton, 4 October 1909; Eustis to Miller 5 October 1909, GNRP.
interests." Fundamentally, Beek attacked the Progressive government for failing to live up to its own ideals of objectivity.¹⁸

Louis Hill coordinated many of these attacks, making sure that the appropriate letters circulated among interested parties. With a view to generating public sympathy to his cause he ensured that Beek billed the Chicago, Burlington & Quincy for the black tent space first, so that the railroad could publicly deny involvement, pointing the finger at the Union Pacific.¹⁹

Newell used the furor over the black tent shows to his own political advantage. While defending the Service's actions to outside critics, the attack gave him leverage in his internal war against Ballinger. Newell denied personal involvement in the shows, stating that Perkins had ignored the official chain of command and worked directly with Ballinger. Newell also used Louis's complaints to justify two departmental investigations. These verified Louis Hill's accusations that Perkins had profited personally from the black tent shows, receiving five hundred dollars a month from the Union Pacific over and above his federal salary of two hundred and seventy-five dollars. Perkins had also agreed to route all the freight connected to the tent shows by that line and its subsidiaries.²⁰

The investigations and their findings reflected a broader problem within the Reclamation Service than graft. With the appointment of Ballinger in 1908 an ideological rift, and subsequent power struggle, soon appeared between the Pinchot-ite Newell and his boss Ballinger. Perkins sided with Ballinger, reporting that "The administration of F. H. Newell has been disastrous to the Reclamation Fund. . . . He is not a skilled or experienced engineer. . . . He is of a weak and vacillating nature." Perkins also provided Ballinger with details of the costs of the various projects undertaken and adjudged that "neither foresight nor ordinary

¹⁸. J. H. Beek, Minnesota State Fair Association, to Reclamation Service, n.d.; to Perkins, 27 September 1909, GNRP.
¹⁹. L. W. Hill to Miller, 28 September 1909, GNRP.
²⁰. L. W. Hill to Miller, 5 April 1910; to D. M. Hoyt, E. H. Cooney, Governor Norris, Helena Independent, W. B. George, 5 April 1910, GNRP.
engineering or business ability were shown in undertaking the
collection. 21

Newell, on the other hand, received significant political support
from Pinchot, who wrote to President Taft that "Under Mr. F. H. Newell, as
Director, the U.S. Reclamation Service has become an organization of
exceptional efficiency." Pinchot-ites opposed Ballinger as a puppet of
western power trusts who would inevitably turn public resources over to
greedy corporations. Pinchot saw Ballinger's aim as fostering the
railroads and power and mining companies, which resulted in "his desire to
cripple the reclamation service by ousting the man who has built it from an
iridescent dream to a great, practical, home-making, dollar-yielding
reality." 22

This internal division in the Reclamation Service supported Newell's
claim that he knew nothing of the black tent shows and that they had been
arranged through Perkins and Ballinger. On the basis of the investigation
findings, Newell did attempt to discipline Perkins. He first informed him
that he "should immediately cease all such connection by which you profit
personally" and, five days later, suggested his resignation. 23

In defense of his own actions and those of his subordinate, Ballinger
launched his own inquiry into the events surrounding the black tents shows
and the efficacy of the Chicago office generally. Not surprisingly, his
investigation reached markedly different conclusions than those conducted
under Newell. This research exonerated Perkins from the charges of graft
and, in fact, the report recommended that the Chicago office be reorganized
by giving him more authority. 24

Louis Hill and the Great Northern had hoped to use the black tent
shows to effect a complete reorganization of the Reclamation Service and
its personnel. Louis launched a complete lobbying campaign, buttressing
letters to federal bureaucrats with sending copies of relevant reports and

21. Senate, Investigation of the Department of the Interior and of
the Bureau of Forestry, p. 84; Perkins to Ballinger, 1910, Ballinger
Papers, UWA.
22. Pinchot to Taft, 4 November 1909; Article by Roy Crandall, sent
to E. C. Brainerd, editor of the Post-Intelligencer, 14 August 1909,
Ballinger Papers, UWA.
23. Senate, Investigation of the Department of the Interior and of
the Bureau of Forestry, p. 1836-38.
letters to politicians and press agents. Claiming that he squashed the black tent shows due to a visit to Washington, D.C., Louis failed to implement the larger corporate agenda.25

In fact, the Great Northern faced a serious political dilemma as the investigations into the black tent shows progressed. Despite the fact that Louis publicly claimed that "I have no interest for or against Mr. Pinchot or Mr. Ballinger," he, like most other power brokers in the West, heartily opposed Pinchot's conception of conservation. Privately he asserted that Pinchot's "theories are not favorably accepted in the western states for the reason that they would seriously retard the development by withdrawing too great a portion of the public domain and closing forest reserves that should be partially open for settlement." Louis Hill realized that his railroad held a vested interest in exonerating Ballinger from Pinchot's charges, yet the trail of responsibility for the black tent graft led directly to Ballinger, not Newell in Pinchot's camp. Realizing this, Louis settled for the end of the shows and resumed generic criticisms of the Reclamation Service that demanded its reorganization. Hill's attacks remained firmly focused on Frederick Newell.26

Louis Hill received more fodder for his complaints against the Reclamation Service in June 1910 when a Chicago real estate businessman sent him a copy of an article supposedly written by Newell for the Canadian Pacific. In this article, Newell compared the irrigation projects in Canada and the United States unfavorably to the latter, and also decried the possibilities inherent in dryland farming. The same firm supplied Louis with information on money the Reclamation Service had invested in projects which it later abandoned. Louis distributed this information to various editors and complained to Ballinger, who promised an investigation.27

25. L. W. Hill to Charles B. Nichols, Leslie's Weekly, 6 April 1910; to D. M. Hoyt, E. H. Cooney, Governor Norris, Helena Independent, W. B. George, 5 April 1910, GNRP.

26. L. W. Hill to Nichols, 6 April 1910; to M. J. Costello, 28 June 1910, GNRP.

27. McKinney, McKinney, Hobbs & Mass, to L. W. Hill, 6 and 18 June 1910; L. W. Hill to Nichols, 28 June 1910; Ballinger to L. W. Hill, 6 August 1910, GNRP.
Ballinger had already received a copy of the article from Perkins a few months prior to Hill's complaint. Perkins claimed that it had been submitted to the National Irrigation Journal but that the editor, noting the "fulsome . . . praise" given to Canadian projects, especially those in the Bow River Valley, had sent it to Perkins. Despite this agitation, Louis and others achieved nothing by their campaigning. Louis was unable to prove Newell's authorship of the article, and the personnel of the Reclamation Service remained in place.28

Ballinger, as determined as the Hills to dispose of Newell, tried to capitalize on his victory over Pinchot in the 1910 senatorial hearings by asking Taft to approve the dismissal of Newell and Davis. Taft refused, fearing further public controversy. The hollowness of Ballinger's congressional triumph became clear in the fall of 1910 when Progressive, pro-Pinchot victories in the western states further undermined his authority. Having initially fostered the controversy through vacillation, Taft adopted a more active stance by firing Pinchot in 1910. Increasingly convinced that the factionalism in the conservation movement could only be healed by the removal of the other main antagonist, Ballinger, Taft forced him to resign in March 1911, replacing him with Pinchot-ite Walter L. Fisher.29

Toward the end of 1909, growing disillusionment of Great Northern personnel toward the Reclamation Service crystallized. The combination of the black tent shows, financed by the Union Pacific and advertising the Southwest, continual complaints from settlers along the Great Northern, and Newell's supposed authorship of an article promoting Canadian irrigation resulted in an all-out campaign against the Service by Louis Hill. The campaign resurrected earlier political maneuvers such as the push for the Newlands Act. Louis wooed editors, called in private markers with congressmen, and even contemplated taking over some reclamation projects. However, all his efforts accomplished little, and the political victory went indisputably to the opposition.

The failure to effect change in the Reclamation Service succeeded in fostering Louis's personal, and the Great Northern's general, animosity toward the federal agency. Despite both institutions' belief in the need for irrigation in the arid West, the gulf between them widened as the Reclamation Service became caught up and stalled in bureaucratic red tape. The corporate focus of the Great Northern prevented its personnel from recognizing support for irrigation projects outside the railroad's territory as anything other than favoritism.

The removal of Ballinger from the Interior and the triumph of the Pinchot-ites in federal land management constituted a serious blow to the Great Northern Railway. It represented the failure of the corporation, headed by Louis, to sustain the political influence which had proved so useful. It resulted in the dominance of Pinchot's ideology of governmental management for the public domain, at least within the federal bureaucracy. It also reflected a clear-cut move toward a narrower, Progressive definition of expertise, moving authority and power to academically qualified bureaucrats. Ballinger, with his deference to private as well as public interests, tacitly acknowledged that expertise in land management could reside in a multiplicity of places and persons. With Ballinger's resignation, Pinchot's vision of a public domain controlled by bureaucratic experts with regularized credentials, gained ascendancy.

At the same time as Louis Hill fought and lost the battle over the Reclamation Service, many of the same characters contested many of the same issues through the forum of the national conservation movement. As with irrigation, Louis Hill marshaled much of the political struggle over conservation. His father, however, because of his self-created image as a successful farmer and longterm concern with soil conservation, moved to center stage.

James J. Hill had always asserted that wasteful farming lay at the root of many of the American farm problems. Despite the continued success of monoculture, Hill believed American farmers needed to practice the intensive, diversified agriculture of European countries such as France or Denmark to keep production levels high. In his public addresses at the end of the first decade of the twentieth century, Hill consistently stressed the need for farmers to be more conservative in their methods, especially
with respect to soils. He had long preached that "what you take from the soil you must put back." Indeed this had provided part of his dual justification for diversification, the production of free fertilizer. Hill's advocacy and the visibility of his ideas grew as an academic debate propelled the issue of soil fertility into the public eye. This prominence gave the railroad magnate a place in the early national conservation movement.30

Soil fertility and conservation gained public prominence in 1903 when Head of the Bureau of Soils Milton Whitney issued a Farmers' Bulletin disclaiming the need to fertilize soil. Whitney argued that "practically all soils contain sufficient plant food for good crop yields, [and] that this supply will be indefinitely maintained." He claimed that experiments at the Rothamsted station in England, based on the work of eighteenth-century agriculturist Jethro Tull, demonstrated that farmers could maintain soil fertility solely by appropriate crop rotation and careful tillage.31

Whitney based his argument on the belief that the soil contained all the necessary chemicals which could be continuously replenished by water movement. Using research of the Bureau of Soils, he concluded that soils differed little in their compositions and that the issue of maximizing production pivoted on soil physics rather than soil chemistry. Productivity rested on three factors: the "mechanical condition of the soil"; the ease with which water could permeate it; and the amount of moisture present in the soil or the climate. Whitney postulated that the only chemical problem inherent in cultivation centered on different plants excreting toxins which proved deleterious to subsequent crops; the best solution to which was crop rotation.32

Whitney's claims caused an uproar among soil scientists. At a time when scientific agriculturists still faced powerful attacks on their claim to expertise and leadership, many believed in the necessity of presenting a united informational framework. Whitney's deviation from the mainstream of academic thought undermined the apparent objectivity and certainty of science. Additionally, a federal leader's propagation of incorrect information provided opponents of scientific agriculture with a formidable weapon. Whitney's academic opponents countered that crops did permanently deplete the soil and that scientifically designed, artificial fertilizers offered the only effective remedy. Concern for their tenuous ascendancy as objective experts, combined with a growing fear among agriculturists that American farm practices would lead to a food shortage if not unchecked, made a response to Whitney's bulletin imperative. 33

Dr. Cyril Hopkins, a professor of agricultural chemistry at the University of Illinois, led the opposition. Hopkins cast Whitney's error in most invidious terms, predicting that, "the injury to American agriculture that may result from the wide dissemination and adoption into agricultural practice of erroneous teaching from one occupying a national position of high authority is too vast to justify agricultural scientists and investigators in the easier and more agreeable policy of ignoring these teachings." Hopkins rationalized the attack on Whitney as an unpleasant, but necessary, moral crusade. 34

The conflict lasted much of the decade. Both sides published evidence supporting their theories and mobilized support from authorities as varied as the Association of Official Agricultural Chemists and Congress. 35

Despite the continuing controversy, Whitney remained in office and kept advancing his theories. In 1908 he presented a report to the National Conservation Commission which offered a modified perspective. Whitney changed his main thrust, attacking "unscrupulous manufacturers" who sold farmers "worthless materials for exorbitant prices." He called for more

34. Ibid, 14.
35. Eugene Davenport, University of Illinois Agricultural Experiment Station, Circular 123 (1908); Hopkins, "Chemical Principles of Soil Fertility," 1-4.
investigation into the principles governing fertilizers and more legislation to control their manufacture. The next year he issued another Farmers' Bulletin which compared the mineral compositions of soils in America and Europe. The similarity of his findings, compounded by the high productivity of some European systems, led him to conclude once more that "there is [no] danger of permanent loss of fertility of our soils through loss of mineral plant-food constituents . . . through the removal of our very moderate crops."36

The emergence of this debate over soil science, synchronous with Hill's growing concern with soil exhaustion throughout the nation, increased his visibility. The director of the Illinois Agricultural Experiment Station, Eugene Davenport, talked about "warnings of soil depletion from men such as James J. Hill." As a result of this visibility, President Roosevelt invited Hill to be one of four guest speakers at the Governors' Conference on the Conservation of Natural Resources, held at the White House in May 1908. The official invitation cited his areas of expertise as being "transportation and . . . the commercial development of the country." Hill accepted with alacrity and highlighted his area of concern: "The greatest foundation of value and, I might say, of life itself, is in the fertility of the soil, and this is being wasted as recklessly and rapidly as any of the others."37

The conference was well attended. Governors from forty states and territories came, along with members of the cabinet and the Supreme Court, representatives from various national organizations, and periodicals, and special guests including Milton Whitney.38

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Hill and two other speakers, Andrew Carnegie and John Mitchell arrived early on the first day and took front row seats in the East Room of the White House. Carnegie and Mitchell both spoke that first day, one about ores and minerals, the other briefly on the waste of coal. On the second day Hill's lengthy address provided, according to national newspapers, the "stellar speaking attraction" which "won more attention to the 'conservation of resources' proposition than all other efforts in that direction." As well as discussing forests and coal, Hill spent most of his talk detailing the declining productivity of American soils. With his usual extensive use of statistics, he demonstrated the diminishing returns of soils throughout the nation. The remedy he offered combined crop rotation with natural fertilizers to act as "tonics" for the soil, stressing manure as fertilizer.39

His speech was well received, making a "very deep impression" on Secretary of Agriculture James Wilson. William Jennings Bryan, who also attended, considered that he had "rendered the Conference a real service." Professor Charles Van Hise of the University of Wisconsin and president of the National Association of State Universities upheld Hill's ideas about the importance of manure as a fertilizer in a later presentation. Accolades paid to Hill's speeches by federal and university experts, combined with favorable coverage in the newspapers, catapulted Hill to a position as an expert regarding soil conservation.40

The acknowledgment of Hill's expertise in soil conservation in the media and by the federal experts attending the conference, placed him in a favorable position to exercise authority. Semi-retired from the railroad, Hill toured his territory in the fall of 1909 speaking at county fairs. His talks continually refined his arguments about soil conservation, and in 1910 he collected sixteen of his essays on favorite topics for publication as Highways of Progress. Five of these papers dealt directly with agriculture, all of which included Hill's views on soil conservation.41

40. McGee, Proceedings of a Conference of Governors, xxv, 96, 203, 432; Roosevelt to Hill, 8 June 1908, General Correspondence, JJHP.
On hearing of the intended volume, Cyril Hopkins approached J. P. Morgan to arrange an interview with Hill. Hopkins was anxious to set Hill straight on several matters "in connection with the rotation of crops and the maintenance of the soil," especially because of "the tremendous influence [the] book will have." Hopkins's concern centered upon Hill's statement that "a proper three or five year rotation of crops actually enriches the soil." He feared that Hill's view trespassed on the errors enunciated by Whitney, whom Hill had met at the Governors' Conference. Hill reassured him in a well-cited letter that this was not the case and that he just saw rotation as an intrinsic part of a three-part system which included fertilization and careful tillage. Hopkins also stated that manure provided an insufficient fertilizer, questioning the work of Van Hise (also at the conference) who asserted that if a farmer applied all manure to the soil all the necessary elements would be returned. Hopkins pointed out that livestock utilized soil nutrients, through feed, for meat and milk production and thus the chemicals ingested far exceeded those excreted. Even if farmers applied all barnyard manure to the soil, therefore, it would remain insufficient to maintain fertility. Hopkins's arguments proved persuasive enough that Hill began to embrace the importance of artificial fertilizers, although never abandoning his stress on the ease and importance of manuring.42

The attention directed at soil science due to the Whitney/Hopkins controversy in combination with Hill's longstanding interests in productive farming and the nascent conservation movement temporarily validated his claim to agricultural expertise on a national level. Recognition and deference from federal and academic experts ostensibly placed Hill in a position to influence national policy as well as farming practices. However, the larger political conflict surrounding the Ballinger-Pinchot controversy soon subsumed questions of Hill's expertise and soil conservation.

By the time of the first Conservation Congress in Seattle in 1909, the controversy was in full spate. Although Taft had yet to decide on the necessity for a congressional hearing, the main ideological and material issues had crystallized in the months following Ballinger's appointment. Both sides had spent the summer of 1909 publicizing their positions, but the Pinchot faction successfully dominated the Seattle meeting, receiving considerable support from westerners. This interregional backing of Pinchot undermined claims by the Ballinger-Hill group that the problem lay in sectional misunderstanding, with the East attempting to dominate and direct the West. The congress adjourned after deciding to hold the following meeting in St. Paul.43

In 1910 the Governors' Conservation Committee asked Louis Hill to help raise funds to defer expenses of the St. Paul congress. Louis proved more than willing and petitioned various local railroad companies for a contribution of five hundred dollars. Louis also participated in the local committee to appoint the speakers, and he worried that Gifford Pinchot and "his crowd, who are all eastern theorists," would dominate the conference. Pinchot, although fired from his federal office early in 1910, still held the position of chairman of the National Conservation Association, the sponsoring body for the conference. The men who dominated the association, Louis believed, "would seriously retard the development [of the West] by withdrawing too great a portion of the public domain." He feared that, unless some effort was made to contain this eastern influence, many important westerners would boycott the St. Paul meeting. Consequently, he launched a lobbying campaign to ensure that men "who can speak in the interest of home settlement in the west," accepted invitations to speak at the conference.44

The invitations to speakers came from the Association's national offices in Washington, D.C. and were, according to Louis, dominated by Pinchot. Despite this, James J. Hill received an invitation to speak at the conference on soil conservation as, so the letter read, "No man in the

44. L. W. Hill to C. G. Goodrich, E. Pennington, W. A. McGonagle, F. E. House, A. J. Earling, and Marvin Hughitt, 16 February 1910; to Costello, 28 June 1910; to Carter, 28 June 1910, GNRP.
United States is so well qualified to discuss this subject as yourself."
When the Association published the proposed list of speakers, Louis Hill objected to Taft's secretary, Charles Norton, that the list was "decidedly against the present administration," and that Pinchot's group refused to allow the conference to stage a Taft day. Minnesotan Knute Nelson, chairman of the Senate's committee on public lands and an old political ally of the Great Northern, concurred with Louis Hill. He believed that Pinchot and his allies intended to utilize the entire conference as "a drive at President Taft," especially by Pinchot's attorney in the congressional hearings, Louis Brandeis, who Louis Hill judged as "one of the worst and most unscrupulous pettifoggers I have ever seen."45

The proposed representation for the conference upset other politicians and businessmen who favored greater state control of western resources. Governor Marion Hay of Washington also favored the states' rights position. Having been asked to nominate delegates for the conference, his advocacy for at least one state-control representative met with outright refusal. This forced Hay into open opposition to the federal position on conservation, and he sent letter to western governors inviting them to a meeting in Salt Lake City to try and protect western interests.46

Despite considerable machinations and negotiations on the part of various westerners such as Louis Hill and Hay, which included a meeting in Chicago and one in Salt Lake, the program for the St. Paul conference remained little changed from Pinchot's original proposal. Taft had been invited but "North and South Dakota, Montana, Washington, Oregon, Wyoming, Utah and Colorado are only represented on the program by Senator Dixon, of Montana." At this point, Louis changed his tactics and, realizing that the program could not be altered in his favor, started working to implement a boycott of the meeting. Leaking information on the program to Governor Edwin Norris of Montana to take to the meeting of western governors in Salt Lake City, he stated that he thought the western governors ought not to condone the meeting by attendance. In addition he refused to offer reduced

rates on the Great Northern if the governors did not come. This ploy worked, and many of the western governors stayed away, for which Louis publicly blamed Pinchot.\footnote{L. W. Hill to Edwin Norris, governor of Montana, 12 August 1910, (two letters); to Charles Norton, 16 August 1910, GNRP.}

The conference proved a triumph for the Pinchot-Roosevelt faction, favoring federal control of conservation. Governor Hay, who did attend, had little impact and later wrote of the conference as "The frameup at St. Paul [which] was so rank that it was really laughable." Overall the states' rights advocates were ignored and ridiculed. The speeches given by critics of federal conservation met with disinterest from the audience showing, as in Seattle, that despite their claims, they did not represent a West unified against federal control. Many westerners stood solidly behind Pinchot, believing that only federal authority could undermine the region's industrial political machines and ensure more equitable land use and management.\footnote{Bergman, "The Reluctant Dissenter," 27-33; Hay to Dr. F. O. Hudnut, 15 September 1910, Hay Papers, Washington State Archives, Olympia, Washington; Richardson, \textit{Politics of Conservation}, 100-01.}

James J. Hill gave his speech during the afternoon of the third day. Despite the title of "Soils, Crops, Food and Clothing," Hill used the opportunity to attack federal control of national resources. Using irrigation as his example, he stated "There are dangers inseparable from national control and conduct of affairs. The machine is too big and too distant; its operation is slow, cumbersome and costly. So slow is it that settlers are waiting in distress for water promised long ago." Roosevelt, Pinchot, and former secretary of the interior, James Garfield among others, overrode Hill's views, and the old railroad man was also subjected to direct attack for his speech. Two days after his presentation Francis Heney, a San Francisco lawyer and avid Pinchot-ite, accused Hill of wasting national resources through the congressional land grant worth at least six hundred million dollars to the Great Northern. He also stated that Hill's annual salary was fifty thousand dollars. Despite the inaccuracy of his statements--the Great Northern received no land grant and Hill had never drawn a salary, personally flourishing from shares alone--the attack proved very popular with the audience. Hill received no opportunity to respond,
and the same day the conference ended with considerable strife over its resolutions. Although the federal component won out, state advocates such as Governor Hay offered heated opposition.49

The outpouring of conflict and acrimony which marred the conference took some time to die down. Leslie’s Weekly, a Chicago newspaper which favored the Hills, issued a lengthy description of Pinchot’s manipulation of the program of the conference and of the fight launched to add some pro-western speakers. To refute Heney’s attack James J. Hill issued a public statement that “The Great Northern did not receive a dollar in money or an acre of land from the federal government [and] . . . that I have never received . . . one dollar of salary from any railroad company.”50

Despite these defenses, the pro-federal conservation movement remained dominant. In fact, the election of a number of Progressive, pro-federal governors in western states in the elections of 1910 exacerbated the situation. Federal experts aggressively asserted their hegemony over public land management, assuming power previously distributed among states and corporations. Hill, a victim of this centralization, removed himself from involvement in the growing national movement for conservation.

Responding to a request from the new president of the National Conservation Congress, Henry Wallace, to pay for the printing of the proceedings of the St. Paul meeting, Hill wrote, “While I have for a long time, and am now, deeply interested in conservation of our natural resources, I have not forgotten the unfair and shabby manner in which many of its friends were treated in Saint Paul.” Wallace also invited Hill to address the third National Conservation Congress in Kansas City. Hill refused and remained adamant despite Wallace’s repeated requests. Hill did include in his letter a five-page statement on conservation which could be read at the conference if desired, a strategy he repeated in 1912.51

49. Seattle Post-Intelligencer, 8 September 1910; Saint Paul Pioneer Press, 7 and 9 September 1910; Minneapolis Morning Tribune, 8 September 1910.


51. Bergman, “The Reluctant Dissenter,” 30; Henry Wallace to Hill, 11 March 1911, 5 and 12 August 1911; Hill to Wallace, 16 March 1911, 7 and 28 August 1911; to Thomas Shipp, General Correspondence, JJHP.
Although removing himself from the national movement James J. Hill remained interested in conservation. Instead he involved himself in local groups, which he could more easily dominate, using their meetings as a forum for propounding ideas and attacking national trends. In November 1912 Hill delivered a speech at the Second Minnesota Conservation and Agricultural Development Congress in Minneapolis. “The first business of real conservation,” he insisted, “is to lift agriculture to the rank of a science well understood and practically applied. . . . This is real Conservation. It is not a temporary fad, not a method of serving personal ambition or local interest, but a system of harmonious co-operation between the laws of man’s environment and his liveliest anticipation and most joyous activity.” Thus he simultaneously vindicated his interest in conservation as altruistic, while condemning his opponents as self-aggrandizing and unnatural.52

By 1912 Hill found that his earlier use of federal expertise to promote agricultural change had backfired. The creation of the Reclamation Service enabled federal experts to refine their conception of expertise and ensure its dominance at the expense of amateurs like Hill. Former governmental allies had thus undermined Hill’s position as an agricultural expert.

Pinchot’s professionalization of federal land management and his success in the struggle with Ballinger, heightened Hill’s isolation. Roosevelt and Pinchot used Hill’s prominence to launch a national awareness of conservation, but they had no intention of deferring to Hill’s ideas at the White House Conference. Thus, while achieving some media validation of his agricultural expertise through involvement in soil conservation, James and Louis Hill remained paper tigers when it came to national policy.

Loss of political clout effectively hamstrung Hill and his railroad in policy areas other than transportation. The Hills’s continued attempts to influence agricultural development in the northern tier by political lobbying, direct media attack, and appeals to presidents, consistently

failed. The ghettoization of Hill's agricultural interests resulted in him, and his railroad, removing themselves from the institutional involvement which they had cultivated for two decades. The increasing national emphasis on professional expertise compounded this isolation. As civil engineers dominated the Reclamation Service and professional foresters assumed control of the public domain, amateurs, such as Hill and Ballinger, were marginalized in policymaking and their claims to expertise refuted.

While this process played out on a federal level, a similar pattern unfolded between the railroad and local institutions. Embarking on a series of dryland farming ventures to compensate for the lack of irrigation taking place in his territory, Hill found his expertise as contested by state and regional institutions as it was on a national level by federal authorities.
With governmental irrigation stalled in the northern tier and interaction between the railroad and federal agencies degenerating into acrimony, Hill and the Great Northern explored new ways of increasing the agricultural productivity of railroad territory. By the early 1900s the obvious alternative to irrigation on the northern plains had become dryland farming. The Great Northern's interest in dryland experimentation and promotion dated as early as 1906 and, as conflicts with the Reclamation Service grew, so did the railroad's financial commitment to dry farming. Attempts to coordinate research and development with the Montana Agricultural College and promotion with the Dryland Farming Congresses proved as frustrating as alliances with the Reclamation Service and conservation movement. The railroad once more found itself at loggerheads with institutions and agencies.

When efforts to promote agriculture through institutions failed the Great Northern revisited private action. However, aware of the problems inherent in Hill's earlier image of gentleman farmer, the corporation carefully established a more professional basis for expertise. The Great Northern founded an Agricultural Extension Department in 1912 staffed by likeminded agriculturists. The department conducted its own experimental and educational program and continued work which had previously been conducted under the auspices of the Industrial Department. Unlike later railroad programs which functioned as a means of disseminating university information, the Great Northern's department in the early years clearly had its own agenda and conducted its own research.  

The Great Northern started financing dryland farming experimentation in 1906 through a cooperative agreement with the Northern Pacific, the state of Montana, and the Montana Agricultural College. Great Northern funded experiment substation along its line for three years. In 1909 the

railroad limited its expenditure to $1,700 for a new station at Chester and fifty dollars a month toward the salary of supervisor M. L. Frang of the Montana Experiment Station. The line also furnished transportation for Frang and for Professors Linfield and Atkinson to visit the stations at Harlem, Havre, Chester, Fort Benton, Great Falls, and Moccasin.2

The Great Northern’s decision to discontinue its support of the Montana Experiment Station was intimately connected with the nature of the railroad. Results had not been consistent; some of stations had successfully promoted settlement but others had not. In October 1909 Thomas Shaw reported to Louis Hill that 250 homestead claims had been filed around the recently established station at Chester. He also reported that land prices at Moccasin had doubled since the experiment station had opened eighteen months previously. On the other hand, when W. W. Broughton, general traffic manager for the company in Montana, raised the issue of continuing the work at Chester in February 1910 Louis Hill wrote to him, “At present I feel that we should not donate anything for Montana experimental stations for the reason that in the past we have not obtained satisfactory results.” Railway personnel believed that the production and settlement generated did not justify continued expenditure.3

Tension arose between the railroad and university academics over the future of dryland farming. The Great Northern wanted to promote dry farming settlement faster than the experiment stations believed justifiable. In early 1910 the director of the Montana Agricultural

2. F. B. Linfield, “Fourteenth Annual Report for the Fiscal Year ending June 30, 1907,” Montana Agricultural College Experiment Station, (February 1908), 164; W. W. Broughton to L. W. Hill, 26 December 1907; “Co-operative Work in Dry Farming in Montana,” anon., undated, Great Northern Railway Papers, Minnesota Historical Society, St. Paul, Minn., (hereafter GNRP). In 1907 the Northern Pacific contributed three thousand dollars to dryland farming experimentation and the state of Montana to two thousand. The state also gave two thousand dollars to start a station in Fergus County not far from Moccasin in the Judith Basin, on a branch line of the Great Northern. All parties found the work generally satisfactory despite some personnel problems at the Shelby station. In 1908 the Northern Pacific’s contribution dropped back to $2,500, and the Shelby station along the Great Northern was discontinued. In 1909 the state increased its contribution to nine thousand dollars and the Northern Pacific to five thousand, with two more stations being established along its line. The Chicago, Milwaukee and St. Paul Railway also committed two thousand dollars per year for two stations on its road.

3. L. W. Hill to Broughton, 21 February 1910; Thomas Shaw to L. W. Hill, 1 October 1909, GNRP.
College, Linfield, expressed his concern that settlement was proceeding too swiftly and would lead to farm failure. The general immigration agent for the Great Northern E. C. Leedy forwarded the letter to Louis Hill who responded with a letter of complaint to Montana's Governor Edwin Norris. The letter testified to Louis's desire for settlement and his inherent Social Darwinism: "I do not feel that anyone can take the responsibility of educating all the people who came to Montana to make a living for themselves. We can only handle this matter by selecting the best people we can allowing the theory of survival of the fittest to provide the final outcome."^4

Despite an understandable interest in settlement, the main concern of the Great Northern was generating haulage through crop production, especially wheat. Without a land grant, the railroad depended on haulage for profits. In 1908, the last year that the Great Northern funded the stations at Harlem and Great Falls, the substations' production proved abysmally small compared to yields at the University of Minnesota's experiment station (see Table 1). Even allowing for climatic differences, the Hills decided funding the Montana Agricultural College's program was a poor investment.5

The Great Northern's dual focus on production and settlement led its officials to terminate their involvement with the Montana Agricultural College in 1909. As a corporation independent of the Great Northern, the Northern Pacific continued its funding because of greater concern with land sales. Additionally, the yields on the experiment farms it sponsored, such as Forsyth, proved much better than those along the Great Northern (see Table 1).6

In 1909 the Great Northern gave its maximum support to another dry farming organization: the dryland farming congress. Initially called the

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4. Linfield to E. C. Leedy, 28 January 1910, Montana State University Archives, Bozeman, Mont., (hereafter MSU); Dickman, "James Jerome Hill," 173-174; L. W. Hill to Edwin Norris, 8 February 1910, GNRP.
5. In 1910 James J. Hill published his collection of speeches, Highways of Progress (Garden City: Doubleday, Page and Company, 1910), in it he demonstrated his concern with wheat yields, saying "The average wheat yield per acre in the United States in 1907 was 14 bushels. The average for the last ten years is 13.88. . . . It is a disgraceful record," 75.
6. Thomas Cooper, land commissioner of Great Northern, to Howard Elliott, president of Northern Pacific, 15 December 1908, GNRP.
Table 1. Production figures for experiment stations in Montana and Minnesota, 1908

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<tr>
<th></th>
<th>Great Falls</th>
<th>Harlem</th>
<th>Forsyth</th>
<th>St. Paul</th>
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<td>12.77</td>
<td>4.33</td>
<td>17.34</td>
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<td>Sixty day oats</td>
<td>18.25</td>
<td>27.06</td>
<td>32.92</td>
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<td>29.90</td>
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</tr>
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<td>Turkey Red wheat</td>
<td>10.40</td>
<td>16.63</td>
<td>45.31</td>
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<tr>
<td>Fall rye</td>
<td>8.71</td>
<td>--</td>
<td>32.46</td>
<td>39.8</td>
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</tbody>
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Note: All figures given represent bushels per acre.

Trans-Missouri Dry Farming Congress, this organization had started two years earlier in Denver and included representatives from almost everywhere except the farm. Governors of states and territories could appoint delegates, as could mayors, county commissioners, national and state agricultural associations, railroads, chambers of commerce. The congress also encouraged the attendance of senators, congressmen, officers of the agricultural colleges and the USDA, as well as state engineers and members of state land boards.  

The 1907 meeting, like subsequent Dry Farming Congress meetings, combined boosterism and scientific presentation. Ellery Channing Chilcott, head of the USDA’s new Office of Dryland Agriculture, gave a paper on crop  

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rotation; William M. Jardine of the Utah Agricultural Experiment Station and Robert Gauss, editorial writer the *Denver Republican*, talked on breeding drought resistant strains of plants; others, such as Governor Brooks of Wyoming and Mr. Adams, a minister from Arizona, testified to the beauty and potential of their regions, the energy and industry of the American people, and the belief that science would find an answer, even if the question often remained ill-defined.\(^8\)

The dryland farming congresses continued until 1915, the scope of their work broadening to become national and, by 1911, international. The annual congresses made no attempt to affect the farmers directly or increase their participation at the conferences, but dryland boosterism increased considerably. By the time of the Fourth Dry Farming Congress at Billings in the fall of 1909, the organization published a hundred-plus page booklet detailing the attractions of Montana and the opportunities for settling and establishing profitable farming.\(^9\)

These congresses were testaments to the Progressive belief in the efficacy of science. For many Americans science offered a objective, non-moralistic cure to social problems. The image of science in the early twentieth century was that of an industrial process of cogs and gears rather than a negotiated, organic interaction between man and nature. Thus the issues confronting society generally and specifically agriculture in the arid West, could be dismantled into discrete, solvable problems and then reassembled to create a rejuvenated rural society.\(^10\)

While agreeing with the utility of science in agricultural improvement, James Hill found himself at odds with the majority at the

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conference regarding the nature of expertise. As with irrigation and land management, academics and federal bureaucrats successfully established a narrow, credential-based criteria for agricultural expertise, heavily reliant on formal training. Hill, on the other hand, subscribed to an organic view of farm development based on a symbiotic relationship between man and land. "The tillage of the soil is the most natural and desirable occupation for man." 11

Aligning with Jefferson's vision of the yeoman farmer, Hill believed in the expertise of experience and amorphous wisdom. As a gentleman farmer Hill asserted his agricultural expertise and consistently refuted the primacy of standardized knowledge in agricultural development. Although he supported scientific farming and looked to educational institutions to disseminate ideas and methods, Hill firmly believed that "what has to be taught is not abstruse." The growing dominance of professional agricultural experts undermined Hill's position, making expertise dependent on quantifiable credentials. 12

Such conflicts were apparent at the 1907 congress when Hardy Webster Campbell's authority on dry farming received its first challenge. Campbell, a self-created agricultural expert like Hill, focused on intensive wheat culture with alternating summer fallow. At the Denver meeting, federal official Chilcott's paper on crop rotation as opposed to summer fallow and academic Jardine's emphasis on drought-resistant strains of plants offered a Progressive scientific alternative to Campbell's amateurism. As the boom of dry farming spread and more scientists launched local experiments, many involved in the movement began to dismiss the Campbell System. Chilcott, Jardine, and others helped show that tillage systems had to be adapted to particular soil types, that rotation and crop variety enhanced the chances of profitability, and that larger acreages proved more profitable than 160 acres. 13

The dethroning of Campbell represented more than an increased understanding of the complexities of dryland farming. Campbell, a competent farmer turned publicist, symbolized an increasingly impotent type

of expert in the eyes of the dominant culture, an uneducated one. Federal 
officials and academics aimed to undermine his position and assert their 
own dominance; their ease in executing this coup demonstrated the 
vulnerability of experts like Campbell, and of course Hill, who lay outside 
academe or government.14

The Great Northern did not have any official representatives at the 
Denver meeting, but, by 1909, the corporation demonstrated substantial 
interest in dry farming. Dry farming Congress authorities approached the 
railroad to help organize the meeting both administratively and 
financially. Max Bass, the line's immigration agent, represented the Great 
Northern on the board of directors and agreed to contribute $1,500 for 
advertising and miscellaneous costs.15

The line also offered special rates to people traveling to and from 
the congress. General Traffic Manager Broughton expressed the corporate 
position when he noted that it was in the line's interest "to stir the 
people up and get as many as possible to attend this dry farming congress. 
. . . There is nothing now going on in Montana that will do us more good 
than the proper advancement of this dry farming question."16

The same year James Hill donated one thousand dollars in prize money 
to the exhibits displayed at the International Dry Farming Exposition held 
in conjunction with the congress. The Hills wanted to promote interest in 
dry farming, but they specifically saw the donation as a way to publicize 
the farmlands along the railroad. Louis Hill insisted on exhibits from its 
territory: "It is easy enough to get a list of prizes, but it is also up 
to us to see that the people along our line make exhibits. If they do not, 
the effect of the prizes is lost, as it will be taken for granted that we 
have not any crops to exhibit."17

In addition to promoting settlement and dry farming production, the 
management of the Great Northern saw the Fourth Dry Farming Congress in

15. L. W. Hill to John T. Burns, Secretary-Treasurer, Fourth Dry 
Farming Congress in Billings, 4 May 1909; Broughton to L. W. Hill, 9 June 
1909, GNRP.
16. L. W. Hill to Burns, 4 May 1909; Broughton to L. W. Hill, 9 June 
1909, GNRP.
17. Burns to Hill, 10 December 1909; L. W. Hill to Broughton, 24 
December 1909, GNRP.
Billings as a way to promote haulage along the line from the perspective of the terminal buyers. Louis Hill organized a large party of business and press people to accompany him to the congress on his private train. In a letter to one of the business men from Duluth he stated, "The real object of the trip is to identify our eastern terminal markets with the Montana territory." 18

The Hills also persuaded the exposition to offer special prizes for areas east of the Cascade mountains in Oregon to promote settlement in the Deschutes Valley. Their desire to make a good showing from the area was so great that they sent railroad agents to obtain display produce, paid farmers' entry fees, and subsidized traveling expenses. The Great Northern's officials viewed their involvement in the congress as a golden opportunity to effect changes that would boost settlement. The company hoped that the meeting's publicity would pressure federal officials to accelerate the surveying process, especially for townships within eight or ten miles of the railroad. 19

The Great Northern personnel also sought changes in terminology. Louis Hill believed that use of "arid," "semi-arid," and "dry farming" deterred settlement, giving "a seriously erroneous impression to prospective settlers" that western lands were marginal and difficult to farm. This debate, begun in private, continued during the congress and became pivotal to the Great Northern's decision to disengage from future congresses. 20

James J. Hill, by now chairman of the board of the Great Northern Railway, gave one of the opening addresses at Billings in 1909 and made reference to the most contentious issue of the congress, its name. He said, "dry farming will fail, but intelligent farming, intelligent cultivation of the land will not fail." The following day the congress discussed the name change. Louis Hill argued that the concept of dry farming discouraged settlement and investment by association with aridity. "We cannot get the co-operation of the railroads or expect to get people to come out here if we class this as a dry farming country." His main

18. L. W. Hill to F. A. Patrick, 19 October 1909, GNRP.
19. L. W. Hill to Richard Porter, 25 September 1909, GNRP.
20. L. W. Hill to J. Smith, editor, Judith Gap, 18 October 1909, GNRP.
opponent, none other than Linfield, saw the term "dry farming" as merely semantic and not pejorative.21

The debate ended unresolved, but the congress later revisited the question. This time the discussion was far more acrimonious. Chilcott stated that "dry farming" represented a scientific term applying to agriculture in areas with less than 20 inches of rain per annum and that the congress' focus should be developing scientific methods to farm lands in these regions. He accused the Hills of trying to turn the congress into a colonization organization. Louis Hill did not address this charge. Instead he pointed out that people intimately interested in development of the region, Great Northern representatives and delegates riding with them, had attended with the expectation that the name would be changed. Louis threatened to discontinue involvement with the congress unless the change occurred. He also attacked the federal government for the scarcity of land offices in Montana, claiming it demonstrated neglect of the state's best interests.22

Antagonism to railroad dominance at the conference was widespread. Before the vote, a Mr. Mordt of Oklahoma addressed the issue of railroad involvement and the name of the congress. "I know the sentiment among the farmers. They are not getting scared of this Dry Farming Congress. . . . If the railroads tell us they will not support us, let them go. We can get along without them." With general sentiment opposed to the Hills and their attempts to flex railroad power, the vote reaffirmed the name "Dry Farming Congress."23

This complete defeat of the railroad in a relatively minor matter underscored the corporation's declining influence in agricultural issues. By the early twentieth century Progressive experts from universities and government had clearly gained national ascendancy, if not universal farmer trust. With little possibility of controlling proceedings, the Great Northern withdrew from the Dry Farming Congress. The following year it offered one thousand dollars of prizes for the exhibits at the exposition accompanying the meeting at Spokane, but no money for the congressional

22. Ibid, 102-106.
administration. The organization's officials refused the offer. Louis Hill still saw the congress as sufficiently important that he sent observers, although not as delegates who would “bring forth the fact that the railroads were trying to run the meeting, as they stated last year.”

In subsequent years the line focused solely on the congress' exhibitions. The Great Northern, the Northern Pacific, and the Chicago, Burlington, and Quincy sent produce display cars to Tulsa in 1913, and Louis Hill mandated that Great Northern agents encourage settlers along the road to put together exhibits for the various expositions. The Hills recognized that they could not control the dry farming congresses. Through exhibition they hoped to attract settler interest in the railroad's territory, while avoiding detrimental attacks which ensued from greater participation.

The Great Northern's financial and organizational disassociation from the Dry Farming Congress stemmed from the divergent aims of the many agencies involved. All parties understood that the debate over the name of the conference was really about the deeper purpose of the congress. As one Mr. Harcourt from Alberta noted, "this question [addresses] . . . whether this organization--this Congress--is to be an institution for the boosting of land or for the boosting of education." By making the decision to retain "dry farming" the congress sided with the USDA and experiment stations. Delegates remained committed to boosterism, but they would proceed cautiously and rely on Progressive scientific information rather than simplistic propaganda.

Unlike the break over the experiment stations, the Hills' rift with the dry farming congresses demonstrated a conventional emphasis on settlement promotion. This reflected the Hills' ownership of a number of different railroads. The work the Great Northern undertook with the Montana Agricultural College had been restricted to specific geographic locations, with the limited aim of persuading farmers and settlers along

24. L. W. Hill to Darius Miller, president of CB&Q, 8 September 1910, GNRP.
25. W. P. Kenney, General Traffic Manager, to Carl R. Gray, Second Vice President, 27 June 1912; Gray to Kenney, 29 November 1913; Miller to Jule M. Hannaford, president of Northern Pacific, 23 September 1913; Hannaford to Miller, 20 September 1913, GNRP.
the Great Northern to adopt dry farming techniques to increase agricultural production. The dry farming congresses, however, with its greater national visibility, was a means to increase settlement throughout the Hill lines. The Hills desired to utilize these forums in a broader fashion to benefit all their railroad properties in the northern Great Plains. They believed in scientific efficacy, but they wanted to channel scientific knowledge to aid their railroads. Working from the assumption that James Hill's expertise, resting on farming experience and business acumen, should predominate, the Hills abandoned the congress when the majority rejected their opinions.

By the start of 1910 the Great Northern had thus practically disassociated itself from all official scientific agencies dealing with dry farming in Montana. They had rescinded their support of the Montana Agricultural College's experiment stations, and the dispute over the name "Dry Farming" effectively ended their involvement with the congress. Both squabbles exacerbated the existing rift between the railroad and the USDA, with arguments over conservation and western development souring relations with Milton Whitney of the Bureau of Soils and Chief Forester Gifford Pinchot. The break with the Office of Dryland Agriculture simply compounded the antagonism between the two institutions.

Despite these institutional breaches, the Great Northern still recognized the importance of dry farming for settlement and haulage development along its lines. As the Hills failed to control other agencies they decided to launch their own program of demonstration farms in 1910. Thomas Shaw of the Great Northern's Industrial Department supervised forty five-acre plots on private farms. The plan involved farmers cultivating a five- to six-acre plot of their land under the direction of Thomas Shaw and keeping accurate records of the results. In return for this the Great Northern supplied the seed and paid them ten dollars an acre.

Shaw was a recognized authority on dryland farming in Montana. He often appeared as a guest speaker for Fred S. Cooley, superintendent of the Farmers' Institutes in Montana. In the winter of 1909 he lectured in
thirty-five locations in forty days. He also wrote a regular "On the Farm" column which many Montana papers carried.27

Shaw shared many of Campbell's ideas, but he approached dryland farming in a more sophisticated, scientific manner. Like Campbell, Shaw recognized the importance of subsoil packing and regular cultivation, but he believed that the details of soil cultivation depended on the needs of each particular soil type. Also similar to Campbell, and in opposition to some mainstream academics, Shaw advocated the settlement of small-scale farms. His association with James J. Hill certainly fostered this idea which stemmed, perhaps, from their mutual Canadian background. Hill continually promoted "the substitution of the small farm, thoroughly tilled, for the large farm, with its weeds, its neglected corners, its abused soil and its thin product."28

Shaw's thought deviated most from Campbell in his emphasis on crop rotation to supplement, and even replace, summer fallow, and the use of drought-resistant strains of plants. Shaw also stressed the need for diversification through livestock to provide food and fertilizer for the farmer. All of these ideas Shaw shared with his employer and friend, James J. Hill, although it is impossible to determine whether the common bond was the reason for Shaw's hire or a consequence.29

To launch the Great Northern's private dryland farming experiment program, Shaw visited a number of farms in the fall of 1909 to assess their potential as demonstration plots. In his report he highlighted the railroad's aims: "this land should be amply advertised to induce speedy settlement, and that means should be adopted to instruct the settlers in the principles and methods that underlie the successful handling of land with a light rainfall." To determine which farms would be useful for the Great Northern, Shaw applied five criteria: the current effectiveness of the farming; the lack of settlement in the vicinity; the proximity of the farm to a railroad station; the proximity of crops to the track for observation by passing trains; and the representativeness of the land.

27. Schedule, Fred S. Cooley, Superintendent of Montana Farmers' Institutes, 1909, GNRP; Hargreaves, Dry Farming, 180.
Once again, the needs of the railroad colored the Great Northern’s desire to improve agriculture through dry farming techniques. In locating the demonstration plots, Shaw understood the need for visibility, both to encourage a change in production techniques and promote settlement.\(^\text{30}\)

In addition to Shaw’s recommendations, the railroad also contacted commercial clubs for names of suitable farmers. In this way the Great Northern further linked itself to the boosterish rather than scientific side of dry farming. For many residents of Montana and North Dakota, the appeal of the Great Northern demonstration farms was their practical emphasis. O. P. N. Anderson of the North Dakota Railroad Commission recognized this when he wrote to Louis Hill in February 1910: “Certain classes of our very good farmers . . . look with certain suspicion on almost anything proposed by a college professor . . . . The very fact that your people are suggesting certain things in the way of farming is to most . . . evidence that it is practical and will pay.”\(^\text{31}\)

Yet, despite this apparent break with academia, the railroad fully utilized university resources. It obtained seed for its demonstration farms from the universities of Minnesota and Wisconsin and employed Professor M. L. Wilson of the experiment station at Bozeman to work under Shaw. The Great Northern’s demonstration farm program ultimately reflected Hill’s desire to balance the practical and scientific in his definition of expertise.\(^\text{32}\)

The demonstration farms started in the 1910 season with forty-five farms enlisted in Montana. The next year, when the program extended into North Dakota, forty-two farms enrolled. By 1912 only twenty-five farms remained involved in Montana. After this, the program ceased in Montana, but continued in North Dakota under the auspices of another Great Northern agricultural expert, A. E. Chamberlain from South Dakota.\(^\text{33}\)

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30. Thomas O’Hanlon to L. W. Hill, 2 February 1910; Shaw to L. W. Hill, 1 October 1909, GNRP.
31. O. P. N. Anderson, Office of Commissioners of Railroads, to L. W. Hill, 15 February 1910, GNRP.
32. E. C. Leedy, general immigration agent, to L. W. Hill, 17 February 1910, GNRP.
33. Hargreaves, \textit{Dry Farming}, 170, 180; Shaw to L. W. Hill, 31 December 1912; Leedy to Shaw, 23 February 1913, GNRP.
Despite the short-lived nature of the program, the demonstration plots succeeded in both agricultural production and stimulating settlement. In the fall of 1912 Shaw reported average crop figures for the twenty-five farms involved in the program. The totals compared favorably to production levels of the St. Paul experiment station four years earlier (see Tables 1 and 2). In addition to small grains, the plots produced considerable amounts of hay (2.75 tons per acre), fodder corn (2.14 tons per acre), and alfalfa (1.62 tons per acre).

Settlement increased under the influence of many dry farming boosters including the Great Northern program. Homestead acreage quadrupled in one year from about a million acres in 1909 to 4,732,807 acres in 1910, and remained over three million acres annually until 1917. In 1912 James Hill aided this settlement boom announcing during a speech in Havre, Montana, that family sized farms could prosper in northern Montana.34

Hill's speech reinforced the flood of literature which heralded the efficacy of dryland farming in conquering the semi-arid West. There were a few hesitant voices, usually those of academics, who suggested that more

<table>
<thead>
<tr>
<th>Crop</th>
<th>Yield in bushels per acre</th>
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<tr>
<td>Winter wheat</td>
<td>30</td>
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<tr>
<td>Durum wheat</td>
<td>19.14</td>
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<tr>
<td>Winter rye</td>
<td>22</td>
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<tr>
<td>Oats</td>
<td>72.14</td>
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<tr>
<td>White barley</td>
<td>30</td>
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<tr>
<td>Flax</td>
<td>13.83</td>
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Source: Shaw to L. W. Hill 31 December 1912, GNRP.

34. Dickman, "James Jerome Hill," 176.
research was necessary and that recent rainfall had been abnormally high. Most parties ignored these gainsayers, and immigration to the Plains surged in the early twentieth century. By 1922, 22 percent of the state had been homesteaded, and most farmers followed the tillage and rotation practices advocated by Campbell and Shaw.\textsuperscript{35}

By 1912 the railroad had moved from an ambivalence regarding dry farming embodied in the early agricultural ideology of James J. Hill, through attempted cooperation with various institutions promoting the movement, to developing a system geared to the line's specific needs of production and settlement. Objecting to the Montana Agricultural College's scientific caution in endorsing dryland farming and the low production on cooperative experimental plots, the line severed connection with that institution in 1909. The same year James and Louis found themselves unable to manipulate the dry farming congress' ideology and direction and ended all official involvement. By 1910 the hierarchy of the Great Northern had decided that the optimum way to promote dry farming in Montana was to launch their own demonstration farm program. This met with considerable short-term success.\textsuperscript{36}

In response to the growing antipathy between the railroad and institutional agricultural promotion on a federal and academic level, the Great Northern increasingly developed its own independent promotion program. As well as the dryland farm plots, Louis Hill also decided to increase corporate sponsorship of local fairs. Involvement in such a relatively small organization gave the Hills considerable control.

Pursuing this tactic, the Hills backed the National Apple Show in Spokane, Washington. In 1908 both the Northern Pacific and the Great Northern contributed one thousand dollars, and James Hill personally gave one thousand dollars for the show and another one thousand for the best one hundred boxes of apples from the Wenatchee district. Louis also contributed five hundred dollars for the best fifty boxes of apples from along the Great Northern. This sponsorship lasted for six years but was not without problems. The first year Louis acted as president of the show,

\textsuperscript{35} Shaw to L. W. Hill, 31 December 1912, GNRP; Dickman, "James Jerome Hill," 167, 176; Scott, Railroad Development Programs, 35.

\textsuperscript{36} Roy V. Scott, Railroad Development Programs in the Twentieth Century (Ames: Iowa State University Press, 1985), 35.
and farmers in the Northern Pacific territory of the Yakima Valley claimed he had shown favoritism to Wenatchee entries. Accusations of bias were valid as Louis had issued detailed instructions concerning which areas along the Great Northern he wanted represented in James Hill's winning one hundred boxes of apples. Trying to quell the attacks, Louis suggested that Howard Elliott, head of the Northern Pacific, serve as the next president.\(^\text{37}\)

In addition to the National Apple Show, the railroad also awarded "a silver plated cup and several hundred ribbons to any county [fair] that asks for them." This policy proved considerably cheaper than financing large specialized shows and intended to stimulate farmer interest in scientific agriculture. According to Louis, "there is nothing better than carrying on well arranged county fairs to encourage agriculture in these states." The Hills donated more elaborate prizes to state fairs along the line and to the corn show at Omaha. The Great Northern exercised considerable control in such endeavors, specifying the categories for awards and expending considerable energy collecting champion specimens from their territory.\(^\text{38}\)

Although appearing as grass-roots phenomena, such fairs were usually the product of powerful boosters trying to attract local settlement and link regional production with international markets. Viewed in this context, the Great Northern's participation was an attempt to coordinate its interests with other institutions. Two factors made this strategy more attractive than other institutional involvement. First, fair associations were usually weak and thus easily dominated by wealthy benefactors. Second, fairs did not present a single ideological front. Because of their spatial and conceptual design, they were modular events where a variety of ideas could be expressed in conjunction. Money donated by Hill and the railroad could target specific purposes, promotions, or prizes. At the same time, other funding could further a contradictory point-of-view.

\(^{37}\) L. W. Hill to H. J. Neely, 11 November 1908; to E. F. C. Van Dissel, 12 June 1909; to M. J. Costello, 9 November 1909; Hannaford to L. W. Hill, 30 April and 2 June 1914, GNRP.

\(^{38}\) L. W. Hill to J. C. Stubbs, 12 August 1911; to Leedy, 19 June 1911 and 8 April 1912; Leedy to H. A. Noble, 31 August 1911; to H. H. Parkhouse, 23 August 1912; S. J. Ellison to Broughton, 4 December 1909, GNRP.
Consensus and discussion was not required or encouraged. Thus the Hills maintained complete control over fair prizes and their inherent messages. This resulted in a degree of satisfaction that eluded them with other institutional cooperation. 39

The Hills also sponsored the Better Farming Association in North Dakota both privately and corporately. This Association, financed by banks and railroads, aimed to improve farming practices through an extension program. As an organization funded by businesses, it upheld Hill's longheld belief that the interests of the corporations and the farmers were complimentary not contradictory, but some farmers disagreed. Many saw their problems as stemming from corporate greed rather than agricultural methods.

Organized agriculture, in the form of the American Society of Equity, opposed the Association and its links with the North Dakota Agricultural Experiment Station. Many farmers throughout the nation had consistently pointed to railroads and other agricultural businesses as the source of their financial difficulties rather than their own inefficiency. The farmers in North Dakota were especially extreme in this respect and resented links between their perceived enemies and the land grant institution ostensibly founded for their benefit.

The president of the North Dakota Agricultural College, John Henry Worst, found himself caught in a struggle between businessmen, who often provided much needed funds to the college, and farmers, the college's constituency. The conflict festered until after James Hill's death when the Nonpartisan League gained control of North Dakota in November 1916, giving farmers a temporary ascendancy over business. Once again, the conflict surrounding the Better Farming Association saw Hill's agricultural expertise questioned, by farmers as well as academics. 40


40. David B. Danbom, "Our Purpose is to Serve"; The First Century of the North Dakota Agricultural Experiment Station (Fargo: North Dakota Institute for Regional Studies, 1990), 61-76; Robert L. Morlan, Political Prairie Fire: The Nonpartisan League, 1915-1922 (1955; reprint, St. Paul: Minnesota Historical Society Press, 1985), 60-75.
In addition to expanding their sponsorship of agricultural fairs, shows, and organizations, the Hills also extended corporate agricultural experimentation. By 1912 agricultural work in the industrial department had expanded, requiring a separate agricultural extension department responsible for experimentation as well as promotion. Much of this stemmed from Thomas Shaw's work on dry farming.41

The department conducted research into the maintenance of soil fertility rather than dryland farming. Intent on establishing demonstration farms along the Great Northern, James Hill hired Professor F. R. Crane from the Special Agricultural School in Menominee, Wisconsin. Crane selected five-acre plots on farms beside the Great Northern. The owners agreed to farm according to Crane's instructions, and Crane provided seed, fertilizer, smut treatment, and eight dollars per acre. Farmers retained their rights to the produce. The program aimed to demonstrate how scientific agriculture increased production.42

The program was an apparent success. Good seed and careful farming improved the first year's crop 40 percent over previous yields according to Hill. He then approached Dean Albert Woods, head of the University of Minnesota's agricultural school and college, and asked him for the use of the university facilities for soil analysis to determine fertilizer needs. When Woods declined, Hill converted the greenhouses at his St. Paul mansion into soil laboratories and prepared for the 1912 growing season. In 1913 the Great Northern shipped 150 to 200 pounds of soil to Hill's mansion from each of the 361 farms. By 1915 farmers had enrolled 987 plots in the program. The opinions, if any, of Mary Hill and neighbors along Summit Avenue went unrecorded, and inside the converted greenhouses Crane and his assistant conducted a variety of tests to determine the best fertilizers for the specific soil. Based on Crane's reports, farmers in 1914 and 1915 purchased four hundred tons of fertilizer, all shipped via the Great Northern.43

43. Dickman, "James Jerome Hill," 97, 129-130, 137; Scott, Railroad Development Programs in the Twentieth Century, 46; Circular letter to farmers, 21 June 1912; F. R. Crane to Hill, 28 April 1915, General
Woods' refusal to help with this demonstration farm project stung Hill deeply, and he expressed this discontent at a public banquet honoring his seventy-fourth birthday. Held at the St. Paul Auditorium on 16 September 1912, the occasion was splendid. Banners draped the walls of the hall, while electric lights emblazoned the dates "1838" and "1912." The 1,200 men and one woman (Mary Hill concealed in an alcove near her husband) enjoyed a sumptuous meal while an orchestra, and Captain Sinclair of the Minneapolis police on the bagpipes, provided entertainment. After the feast, encomium followed encomium as the business leaders arose to praise the man as much responsible for their prosperity as any. In the midst of this festive and self-congratulatory atmosphere, Pierce Butler called on Hill to make a speech. The short, stocky, grizzled-haired veteran of the commercial world stood up.

As expected, the speech took listeners back to the early days of the Twin Cities, to a frontier town and a small village at the falls of St. Anthony. As Hill spoke, however, his themes took an unexpected turn. He started to address the issues of soil conservation and the laws of nature, and, before his audience had a chance to catch their breath, he launched into a virulent attack of the University of Minnesota's agricultural school. He vilified their education program, claiming that, "in the last twenty five years, the school has not been worth 25 cents to the state."44

In the following days newspapers covered the banquet, Hill's attack, and a subsequent letter war between Hill and Woods. Hill argued that the university had done nothing to benefit the farmers of Minnesota. He gave statistics showing the increased yield on the Great Northern's demonstration plots and concluded, "Somebody ought to have taught the farmer to do this long ago. It does not seem unreasonable to assign the duty to the state agricultural college." In Hill's mind, the university had failed to benefit farmers, which was, after all, its primary job as a land-grant college.45

Correspondence, James J. Hill Papers, James J. Hill Library, St. Paul, Minn., (hereafter JJHP).

44. Minneapolis Morning Tribune, 16, 17, 20, 22, and 23 September 1912; St. Paul Dispatch, 16 September 1912; St. Paul Pioneer Press, 17 September 1912.

45. Public letter from Hill, 19 September 1912, General Correspondence, JJHP.
Attacks on the university-based agricultural education in fact had a long history. From the early 1870s, farmer groups expressed their concerns about the state of rural America by criticizing various education institutions for not providing effective education for young farmers. The grounds for attack varied: too theoretical syllabi; undersubscribed courses; and encouraging farm boys to leave the farm.46

The University of Minnesota did not escape these attacks. In 1887 the Grange and the Farmers' Alliance claimed that "snobs and theorists" had diverted college funds for a theoretical and experimental program which offered no practical help to farmers. They demanded that the legislature institute a separate agricultural college where practical farming could be taught via demonstration and hands-on experience. Cyrus Northrop, president of the University of Minnesota, prevented the establishment of a separate institution by founding the agricultural school on the St. Paul campus and providing a practical education in basic agriculture and domestic science for farmers' children.47

Thus Hill based his attacks on the university and his stress on demonstration farms in beliefs shared by farmers' organizations. Despite fundamental differences over issues concerning railroad regulation, Hill, the Grange, and other farm groups shared a deep suspicion of book learning. In each case suspicion stemmed directly from an unwillingness among some farmers to relinquish their claims to agricultural expertise to academicians.

By the time of Hill's attack in 1912, however, most antagonism between farmers and universities had subsided into an uneasy truce. Although still suspicious of academics, farmers had forced universities to embrace practical agricultural education. This compromise appeared on the national level with Hatch Act of 1887, which had established federal funding for experiment stations, and on the regional level when state institutions implemented their own extension programs. While farmers remained unpersuaded by scientists' claims of expertise, they did manage to

46. See for example, James C. Carey, Kansas State University (Lawrence: Regents' Press of Kansas, 1977), 41-46; Merle Curti and Vernon Carstensen, The University of Wisconsin, 1848-1925 (Madison: University of Wisconsin Press, 1949); 470-71.
47. James Gray, The University of Minnesota, 1851-1951 (Minneapolis: University of Minnesota Press, 1951), 96-102.
at least partially manipulate university education toward their own ends. Hill's attack on the agricultural school was, therefore, like many of his development strategies, outdated.48

Woods countered Hill's vituperance with charges of amateurism. Woods claimed that the railroad magnate had failed to understand anything about agriculture or the university's mission. He stressed Hill's dependence on experts, including those from the university, and emphasized Hill's agricultural incompetence by citing the problems of drainage at Crookston and the failure of "Jim Hill Corn." He also asserted that the high yields from the Great Northern's demonstration farms resulted from Hill's largesse rather than improved farming: "Whether or not it is practicable for the average farmer to produce in his farm what Mr. Hill is able to produce on five acres . . . is a question that would have to be settled after knowing the amount of money and labor expended by Mr. Hill in securing the results." Woods tried to undermine Hill's position as an agricultural expert by reclassifying him as a rich amateur.49

James Hill's establishment of the largest private demonstration farm scheme in the United States promoting modern scientific methods by quantifying fertilizer needs, supposedly offered an alternative to universities. However, farm organizations had largely ceased their attacks on formal agricultural education by the turn of the century. They did not acquiesce to the ideology of the Country Life Movement or relinquish their claims of expertise to academics, but organizations such as the Grange increasingly adopted a utilitarian approach toward science. They incorporated information from agricultural scientists as part of their data for decision-making, often weighing it on subjective criteria such as the personalities of extension agents.50

The demonstration program of the Great Northern and Hill's attack on the University of Minnesota highlighted his alienation from farming and educational trends of the time. Attacks on university education had

48. Rosenberg, No Other Gods, 159-79.
dwindled in the new century with farmers attempting to utilize agricultural science for their own benefit. Additionally the credibility for railroad’s demonstration program rested in Hill’s agricultural expertise. This had proven problematic and outdated as early as the 1880s, and, by the early twentieth century the concept of a gentleman farmer was archaic. Therefore James Hill’s program of demonstration farms propounding modern, practical, scientific information failed because his claims to expertise had lost almost all validity among his audience.

The last years of James J. Hill’s official involvement with the Great Northern Railway marked the culmination of two decades of dissatisfaction with institutional agricultural development. As national movements to promote irrigation, conservation, and dryland farming unfolded, Great Northern personnel, and especially the Hills, found themselves marginalized, their power undermined, and their expertise disputed. Consequently, the railroad gravitated toward independent agricultural programs. With the hiring of Crane, it inaugurated the agricultural department and pursued Hill’s vision of effective agriculture. In many ways this department reflected Hill’s earlier endeavors as a gentleman farmer, being closely guided by the needs of the Great Northern. That the department operated as part of a corporate entity was also significant. Even Hill realized the uselessness of promoting agriculture on the basis of his personal expertise, so he sought professional validation by allying academics with the railroad. Hill hoped to meld business and academic expertise. Although the department enjoyed some success in promoting fertilizers, the program foundered on Dean Woods’ damning attack on Hill’s amateurism.

By 1912, when James Hill retired from the Great Northern’s board of directors, his family and his railroad backed no agricultural enterprises on a federal level, and very few institutional enterprises on any level at all. Increasingly the railroad developed internal corporate mechanisms to stimulate agricultural improvement. This professional agricultural department, staffed by scientists with the same credentials as at universities, embodied a tacit acquiescence to academic standards of expertise. While James Hill lived, the creation of such a department
proved impossible. Refusing to remove himself from direct involvement or to admit academic superiority, Hill used the department to affirm his claims to expertise. Hill’s very presence continually challenged and contested the information that the department tried to disseminate.\footnote{51. The Minnesota Conservation and Agricultural Development Congress being one of the few exceptions, \textit{Saint Paul Pioneer Press}, 19 November 1912; Curtis L. Mosher to L. W. Hill, 26 November 1912, GNRP.}
The election of Woodrow Wilson in 1912 heralded the ascension of corporate Progressive ideology on a federal level. Little interested in social reform, Wilson, with help from Gifford Pinchot’s attorney, Louis Brandeis, gravitated toward a system of pro-business regulation. The creation of the Federal Reserve in 1913, the Clayton Anti-Trust Act of 1914, and the Federal Trade Commission in 1915 exemplified Wilson’s belief in using government intervention to secure economic freedom. In the years before American involvement in World War I, the nation witnessed a florescence of corporate efficiency, reform, and regulation. These trends moved America away from the lassiez-faire economic climate that had allowed the rise of industrial barons such as James J. Hill.¹

Hill increasingly resembled a cultural dinosaur, marginalized in all areas. The triumph of the federal bureaucracy in the struggle to control western resources had firmly undermined those advocating states’ rights. The West remained dominated by eastern capital and government until freed by the industrial demands of World War II. Hill’s agricultural ideas, too, were out of sync with general trends. Agricultural mechanization encouraged the development of large-scale, monocrop farms. Most farmers could not afford to purchase steam tractors, which flourished between 1908 and 1915, or gasoline engines. The farmers who could afford the new machines tended to be wealthier and possess great acreage. They could benefit from the heavy, unwieldy machines in ways small-scale farmers could not, and consequently, mechanization fostered agricultural economies of scale, especially on the open western Plains. The dryland farming wheat boom on the northern Great Plains flourished, especially as international demands grew during World War I. Profit and technology undermined romantic

attachment to Jeffersonian ideals, and farmers and businessmen alike fostered nascent agribusinesses. 2

Actions of the Great Northern corporation compounded Hill’s ideological isolation in the face of national agricultural trends. Although management continued to make some concessions to the antiquated views of the railroad’s founder, they modernized the line and its outlook, including the agricultural sphere. In 1912, at seventy-four, Hill resigned his position as chairman of the board of the Great Northern Railway. Although this marked the end of his official involvement with the line, he maintained an office in the railroad’s headquarters, which he utilized regularly until his death in 1916. He remained unofficially active in railroad business during his retirement, but day-to-day operations increasingly devolved on the new president, Carl R. Gray, and on Louis Hill, who replaced his father as chairman of the board.

Meanwhile, the now-retired James Hill had time, once again, to increase his personal involvement with farming. Both the North Oaks and Humboldt estates received greater attention, and Hill never deviated from his favorite issues of diversification through dual-purpose cattle, soil conservation and fertility, and small-scale family farming. Hill also continued the grueling circuit of speeches he had established during his years as chairman, giving addresses at various county and state fairs throughout the territory of the Hill lines. Having forfeited claims to expertise by contemporary definitions, both through his own actions and national trends toward professionalism and tertiary education, Hill reverted to his earlier position as a gentleman farmer. In doing so, Hill diverged from his own railway. The Great Northern finally embraced Progressive notions of expertise, while Hill retreated into antiquarian self-justification.

In Hill's absence, and under the auspices of Louis Hill and Carl Gray, the Great Northern's interest in agriculture declined and became more mainstream. The railroad abandoned much of its demonstration and experimentation work, as well as any claim to agricultural expertise. Although the agricultural extension department did continue, it mutated into a publicity department, employing academics to disseminate ideas developed elsewhere. The railway's involvement in the barberry eradication campaign to stop wheat rust from World War I into the 1950s exemplified this new strategy. Agents posted information on barberry eradication, and the railroad lobbied for federal and state funding and research into the problem. Corporate experimental work was notably absent.  

Neither Louis Hill or Gray showed much interest in agriculture, and direction of the department from the head of the company's hierarchy dwindled. Louis also lost interest in funding farmer organizations, fairs, and shows. Instead, the railroad utilized its business and marketing expertise to expand markets and develop more efficient ways of shipping produce. After James J. Hill's death in 1916, Louis abandoned even a pretense of interest in agriculture and invested his energies instead in the development of tourism at Glacier National Park.  

During the years after Hill's retirement as chairman in 1912, the Great Northern shifted its approach to agricultural development. Instead of trying to persuade farmers to alter methods, the agricultural department devised ways to increase profits from extant agriculture. This change in tactics aligned the railroad's agricultural policy with prevailing attitudes toward professionalism. The department abandoned most of its experimental work and hired university professors to disseminate academic wisdom. The changes also marked the abandonment of Hill's grand social vision. No longer would the Great Northern try to create a territory filled with small-scale farms run by Jeffersonian yeomen. Instead it focused on the narrow goal of corporate profit.

In response to its frustrations with various state and federal institutions, the Great Northern paid more attention to reaching farmers.

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4. L. W. Hill to Lewis Penwell, 27 October 1912, GNRP.
and settlers directly, returning, on a corporate level, to a method James Hill had tried and abandoned in the 1880s. At the instigation of General Manager W. P. Kenney and Fred S. Cooley, Superintendent of the Montana Farmers' Institute, the railroad joined with the Montana Agricultural College in 1914 to coordinate a Better Farming train. The plans for the train demonstrated not only a change in the educational perspective of the corporation but also the growing influence of middle management in formulating railroad policy. Louis Hill and Carl Gray showed little interest in the train beyond costs. Similarly, when Kenney approached Louis Hill to discuss an agreement with a number of railroads to discontinue agricultural trains, Louis replied, "You may do as your judgment seems best in this connection." Corporate concerns had already moved far from the central pursuits of James Hill.5

Through Cooley, the Great Northern also became more involved with their old antagonist, the Grange. As the Grange moved away from the political radicalism it had embraced in the 1870s, it became an ideal vehicle for reaching farmers. In January 1914 the railroad offered reduced rates to farmers visiting the state grange meeting in Bozeman, Montana. Later that year Cooley recruited Thomas Shaw to be a keynote speaker at the state meeting for 1915. As with the agricultural trains, however, most speakers except Shaw were academics—not railroad employees.6

Departmental agricultural endeavors also changed. In October 1911 the Great Northern had hired A. E. Chamberlain, former superintendent of the Farmers' Institutes in South Dakota and writer for The Dakota Farmer, as the development commissioner for its development department. Although Thomas Shaw continued to work for the railroad, Chamberlain's hire signposted a more institutional approach to agricultural development. Unlike Shaw, Chamberlain had little contact with James Hill beyond sending him copies of reports. Most of his orders came from his immediate superior, Kenney. Chamberlain displayed a level of business

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5. W. P. Kenney to Carl R. Gray, 18 December 1913 and 19 January 1914; to L. W. Hill, 6 June 1914; Gray to Kenney, 23 December 1913; L. W. Hill to Kenney, 8 June 1914, Great Northern Railway Papers, Minnesota Historical Society, St. Paul, Minn., (hereafter GNRP).

6. Fred S. Cooley to subordinate grange masters, 22 December 1913; to O. E. Young, 12 December 1914, Montana State University Archives, Bozeman, Mont., (hereafter MSU).
professionalism lacking in Shaw. He neatly typed reports with clear subheadings, unlike Shaw's scrawled and rambling handwritten letters. As the department professionalized, the direction of corporate agricultural work grew increasingly removed from James Hill's control and ideological influence.7

Some of Chamberlain's development activities mirrored the agricultural and social engineering efforts of his predecessor and co-worker, Thomas Shaw and of James Hill himself. Chamberlain not only advised growers on methods but encouraged certain ethnic groups to migrate to specific areas, such as "Danes and Hollanders into the Kootenai and Spokane valleys." He also followed the circuit of county fairs and farmers' meetings, giving speeches and judging livestock throughout the railroad's territory.8

Despite the continuing presence of Great Northern personnel at local fairs, Louis Hill discontinued financial support in 1915. He asserted that the results no longer justified the expense. The same year, the Great Northern in collaboration with the Northern Pacific, ended their support of the National Apple Show at Spokane. The event had "outlived its usefulness as a national event," and the railroads doubted "whether [they] . . . receive very much benefit from it." This financial retreat diminished the line's ability to broadcast corporate agricultural ideology. This was, perhaps, inevitable. Without the dynamic leadership of James J. Hill, the Great Northern moved away from agricultural ideology toward economic pragmatism.9

In significant ways Chamberlain's agricultural interests, and investment of time, represented a sharp break from the past. In his first year he divided his efforts between the Pacific Northwest and attending land shows in the East. The land shows were a new, efficient means of luring settlers and investors to western lands. Unlike regional events

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7. A. E. Chamberlain to L. W. Hill and Kenney, 18 October 1911; to Hill, 8 January 1912; Chamberlain, "Report of Industrial Department, January 1, 1912," 1 January 1912; L. W. Hill to R. H. Parkhouse, 27 August 1912; Thomas Shaw to L. W. Hill, 5 February 1915, GNRP.
8. Chamberlain, "Report of Industrial Department"; Chamberlain to Kenney, 13 December 1912, GNRP.
9. L. W. Hill to James A. Murty, 3 June 1915; Jules Hannaford to L. W. Hill, 30 April 1914; Kenney to H. H. Parkhouse, 13 October 1915, GNRP.
with the semi-altruistic function of promoting scientific agriculture, eastern land shows were blatantly corporate phenomena, advertising western lands to the largest possible audience. For the first time in the history of the Great Northern, its main agricultural endeavors had shifted geographically away from the northern tier.¹⁰

A dramatic change in the focus of the development department accompanied this geographical shift. Chamberlain directed his major efforts to ways the railroad itself could increase haulage. He showed special interest in increasing express shipments of fruit from the Pacific Northwest to the East. He believed that, by constructing cooling plants in western Washington and Oregon, fruits "that are now being canned or evaporated and shipped by freight, could and would be shipped by express." He also suggested that the railroad provide more cars for this type of shipment to silence complaints about insufficient numbers of cars and their "filthy and unfit condition." The Great Northern compared unfavorably to the Northern Pacific in the summer of 1912 in terms of icing cars, but the railroad could not meet farmer demand, and the problems of fruit car scarcity and poor maintenance continued.¹¹

Instead of trying to persuade farmers to change and improve techniques, Chamberlain emphasized marketability of produce and methods for the line to maximize profits from perishable goods. This thrust marked a distinct break with the past. Not only did it represent a pragmatic rather than ideological stance; it also demonstrated a growing affinity between railroad personnel and prevailing notions of professionalism. Deferring to university and governmental expertise in the matter of agriculture, Chamberlain and others concentrated on issues of shipment, marketing, and business. This change of focus meant that the development department interacted with agricultural business organizations as much as with farmers. In keeping with Chamberlain's geographical interest in the Pacific Northwest, much of this interaction was with fruit organizations.


¹¹ Chamberlain, "Report of Industrial Department"; Chamberlain to Kenney, 13 December 1912, GNRP.
The railroad aided the Commercial Club of Wenatchee by donating land for a booth to exhibit local fruits and produce. In addition, the line constantly attempted to maintain the number of refrigerator cars necessary to ship fruit and fish east.12

Unlike Shaw, and indeed unlike James Hill himself, Chamberlain deferred to established expertise in matters of agricultural experimentation and development. In early 1912 he wrote to the USDA for information regarding research on cooling plants in California. The USDA's experiments with pre-cooling soft fruits that summer had proved so successful that it agreed to lend the Great Northern three men to help disseminate information during the 1913 season. The USDA also planned to send officials to the Wenatchee Valley to instruct growers on optimum methods and time for harvesting apples for shipment. This use of a federal agency, and deference to outside knowledge and expertise, extended beyond issues of fruit. While visiting Washington, D.C. in 1912, Chamberlain met with Secretary of Agriculture Wilson who promised the assistance of a department representative for two months to travel through irrigation districts “trying to prevail on them [the farmers] to use less water and follow better systems of tillage.” The corporate stress on mainstream expertise was evident even when discussing railroad personnel. In 1913 Carl Gray boasted that the Great Northern employed “agricultural professors of national reputation.” The acceptance of Progressive definitions of expertise had become all-prevailing.13

Part of this increased deference to outside expertise involved the abandonment of independent experimentation and demonstration programs. Despite the apparent success of the dryland program, Louis wrote to Shaw in 1913 that they should see if they had “reached a stage where the farmers will do the work themselves along the lines suggested by you without being paid to do so.” Shaw rejected this suggestion. He saw more work necessary to achieve a fully successful system of dryland farming, he explained to Louis Hill the need to determine relative returns of winter wheat on corn

12. W. F. Gwin to Gray, 12 June 1913; Kenney to Gray, 17 June and 24 November 1913; Gray to L. C. Gilman, 27 November 1913; Gilman to M. J. Costello, 19 December 1913; J. Gruber to L. W. Hill, 9 and 19 March 1914, GNRP.
13. Chamberlain, “Report of Industrial Department”; Chamberlain to Kenney, 13 December 1912; Gray to Herbert Myrick, 22 August 1913, GNRP.
land and summer fallow, the best method for growing alfalfa, and the best way to increase moisture-retention of vegetable matter in the soil. Louis rejected this advice and terminated the demonstration farms, although the railroad continued to encourage farmers to grow and exhibit dryland crops. Louis did not necessarily disagree with Shaw on the need for more experimental work, but he did believe that neither Shaw nor the railroad commanded enough attention to make their agricultural endeavors significant. 14

While Louis and Gray tried to constrain the Great Northern's agricultural promotion to economic issues and to align corporate ideology with the early twentieth-century professional views of agriculture, James Hill remained a vocal and formidable obstacle. Consequently, some remnants of the Great Northern's older programs instituted by Hill continued in deference to the "Empire Builder." Crane's soil experiments continued with some success until 1915 at least if judged by the amount of fertilizer shipped by the railroad. Dean Woods at the University of Minnesota, however, attacked the program as being amateurish. In the scientific parlance of the early twentieth-century, Crane did conduct experiments in a highly subjective manner. He failed to establish controls, and thus, it remained unclear whether improved yields resulted from increased care in cultivation, good seed, or fertilizers.

Crane had also highly unrealistic expectations of farmer ability and time to care for crops. He gave detailed instructions on how to grow, cut, store, and thresh grain, including cleaning the thresher out before and after threshing and not threshing in the wind. As a result, farmers invested three to six times more labor to produce crops from experimental plots than for regular field work. Also Crane carefully instructed farmers on how to report yields. They were to estimate ideal production from any swampy land or areas damaged crops, and add those estimates to the total. 15

By the 1910s Crane's scientific methodology was outmoded. Increasingly scientists designed experiments that could be quantified by

14. L. W. Hill to Shaw, 23 February 1913; Shaw to L. W. Hill, 31 December 1912; Kenney to Gray, 27 June 1912, GNRP.
standard numerical measurements. By making their work reproducible, scientists upheld claims to objectivity. By using statistics they communicated in a language that the ever-increasing scientific community could understand and uphold. Crane and Hill's work, falling into an older scientific tradition of observation and multiple variables, offered an easy target for professional scientists intent on defending their bailiwick.16

James Hill's influence in the Great Northern's agricultural program continued through the employment of Thomas Shaw. Shaw remained popular among Plains farmers. He was in great demand as a speaker among farming groups and other railroads, and he continued to write articles on the agricultural potential of the region which he distributed to papers throughout the nation.17

As with his mentor, Shaw's time as an expert was expiring. Louis Hill and others in the railroad hierarchy worried about the information Shaw disseminated in speeches and print. Shaw's word was no longer seen as definitive by the media. In 1912 he sent an article to the Philadelphia Saturday Evening Post to correct some negative reports of dry farming which they had published a few weeks earlier. Although Shaw accompanied his corrections with a letter from Louis, the paper refused to print them saying, "We recognize Professor Shaw as an authority, but... we believe that a great deal of disappointment [sic] and injury has resulted from over enthusiastic representations." By March 1913 Louis had placed a careful watch on all of Shaw's reports, censoring those that, "are of such a nature that they would do us more harm than good if published." Shaw's reports consistently painted glowing agricultural pictures which stemmed from the antiquated agricultural ideology he shared with James Hill. Shaw himself recognized his archaic position. When the University of Minnesota's experiment station approached the railroad to request help in hauling several demonstration cars, Shaw anticipated that the only problem would be "that some of the people [professors] will not be quite in accordance with Mr. Hill's views on cattle." As a friend of James Hill's, Shaw continued

17. J. H. Young, president of Spokane, Portland & Seattle Railway, to Gray, 29 January and 13 March 1913; Shaw to L. W. Hill, 31 December 1912, GNRP; Oregon Daily Journal, (Portland), 12 May 1913.
In their relationship with external institutions both Hills displayed a lack of the new, faceless, Progressive professionalism increasingly adopted by the railway. Continuing their battle with the Bureau of Reclamation, they viewed themselves as altruistic defenders of western interests. Although ostensibly a proponent of Progressive efficiency, objectivity, and corporate streamlining, Louis's (and his father's) antagonism toward individuals within the Reclamation Service degenerated into a vindictive personal diatribe which the management of the Great Northern tried desperately to curtail.

The Hills based their attacks on the Reclamation Service's incompetence and its failure to understand western needs. Having failed to initiate any action by badgering the Department of the Interior, Louis turned his attention in 1912 to President Taft's secretary, Charles Hilles. Concerned that the government had withdrawn twenty sections in northeastern Montana for irrigation purposes and that homesteaders were being prevented from using the land even for grazing, Louis argued that, "It is little things of this kind that antagonize the West against the Departments in Washington. The Reclamation Department are not only proving themselves of little practical benefit to our portion of the west, but they seem to take every means of antagonizing the settlers."19

The main grounds for attack, however, remained the article purportedly written by Frederick Newell, head of the Reclamation Service, promoting irrigation works in Canada. Louis sent a copy to Hilles and claimed that "The people of the west feel that Mr. Newell is not treating them right and they hold this against President Taft." When Hilles took the matter up with the Secretary of the Interior, the issue came full circle having been brought up with Richard Ballinger in 1910. Newell again

18. L. W. Hill to M. R. Brown, 27 March 1913; to E. E. Faville, editor, Western Farmer, 19 December, 1916; to H. P. Smith, State College of Washington, 27 December, 1916; to R. D. Hezet, Director of Oregon Extension Service, 27 December 1916; to M. R. Brown, 27 March 1913; telegram from H. H. Parkhouse to L. W. Hill, 13 December 1916; Leedy to Parkhouse, 24 April 1912; George Horace Lorimer to L. W. Hill, 6 May 1912; Kenney to Gray, 18 December 1913, GNRP.
19. L. W. Hill to Charles Hilles, 13 September 1912, GNRP.
denied authorship, and Louis Hill again tried to prove him a liar, assigning railroad personnel to track down the publication in Canadian Pacific literature. Despite his considerable effort, Louis failed to prove Newell's authorship.20

Louis next portrayed Newell as unpatriotic, implying that he was to blame for the overspending of the Reclamation Service and its failure to complete projects. Louis sent information on the Service's shortcomings to the editor of the Great Falls Daily Tribune, one William Bole. Bole tactfully avoided Louis's plan, pointing out that the material would "tend to scare away intended settlers on government irrigation projects, and that would not serve your purpose or mine."21

In their continued antagonism toward Newell and the Reclamation Service, the Hills moved away from the interest of the Great Northern and revealed their increasingly anachronistic attitudes. This divergence appeared in James Hill's actions and speeches. More interested in agricultural development than his son, Hill railed publicly at government failure. In 1913 he attacked the Reclamation Service during a congressional hearing. Hill contended that private irrigation projects in Canada had proved cheaper and more effective than those launched by the federal government. Hill focused on government inefficiency saying "I know that when private enterprises in Canada can sell the land and water for $30 an acre and the water on reclamation projects in the United States cost $45 an acre that there is some difference in the cost." Ironically, Frederick Newell, whom Louis Hill had been attacking for years for promoting Canadian irrigation, defended American irrigation. Newell asserted that Canadian projects were generally smaller and less well constructed than American projects, and so were cheaper, but not necessarily better. Secretary Lane finally judged that "the charges against the Reclamation Service have not been sustained."22

20. L. W. Hill to Hilles, 26 September 1912; Samuel Adams to Hilles, 4, 11, and 12 October 1912; W. H. Manss to L. W. Hill, 23 October 1912; L. W. Hill to Manss, 25 October 1912, GNRP.
21. William Bole to L. W. Hill, 3 April 1913, GNRP.
22. J. H. Carroll to Gray, 21 May 1913, GNRP; Tacoma Ledger, 14 May 1913; Morning Oregonian, 14 May 1913; Irrigation Age, March 1913; St. Paul Pioneer Press, 14 May 1913.
In this case, the position adopted by Hill countered the interests of the Great Northern. Attacking the expense of irrigation on the northern Great Plains and comparing it unfavorably to Canadian projects was not calculated to increase settlement along the railroad. In retirement, James Hill had allowed his concerns for the future of American agriculture to eclipse his love of the Great Northern, while Louis's hatred of Newell colored his actions.

Hill's failure to effect change at the congressional hearings further demonstrated his declining political power. In frustration, both Hills continued to lambast the Reclamation Service. Admitting that "I am one of the strong critics of that service," Louis detailed, in a public speech in Oregon, the whole case against Newell from the black tent shows, through the article promoting Canadian irrigation, to the failure to follow through on irrigation works in Montana. He also spelled out actions taken by himself to correct problems and obtain Newell's dismissal. Louis framed the personal and corporate struggle as a battle against tyranny: "That man Newell is like a Russian politician; if things don't [sic] go his way he fires somebody. He ties the can to anybody who opposes his theory and to be perfectly frank and to use good English, when you corner him he lies out of it." 23

By 1913 the Hills had diverged so far from Great Northern policies with regards to the federal agency as to be an embarrassment. L. C. Gilman, Gray's assistant, had worked closely with Newell, engineers, and settlers to complete various irrigation projects in Montana and establish necessary railroad easements across projects. Gilman did this by lobbying and building constituencies, as had been the railroad's practice for years, and although he did not personally like Newell or approve of his neglect of the northern Great Plains, he did recognize the importance of staying on good terms with the man. Thus, the Hills' virulent attacks against Newell and the Reclamation Service struck Gilman as short-sighted. He told Gray "harm rather than good is done by constant criticism of the Reclamation Service. While personally I am of the opinion that its personnel might be very materially improved, I think there is little likelihood that it will be, and if we wish to accomplish anything it will be necessary to work with

23. L. W. Hill speech in Oregon, 5 June 1913, GNRP.
the tools we have." Others concurred. The editor of the Great Falls Daily Tribune wired Gray that President Taft had received a copy of a "very caustic interview on stupidity of reclamation service by J. J. Hill. Such stuff is used by our enemies and does harm it should stop."^24

Despite corporate attempts to circumvent the Hills’s criticisms, they continued to exacerbate the situation and threaten the completion of irrigation projects in Montana. H. N. Savage, engineer with the Reclamation Service in charge of the Sun and Milk Rivers projects, wrote confidentially to Gilman that "The situation . . . is very precarious. The chronic adverse criticisms of Messrs. James J. and L. W. Hill which has extended over a period of years has become a very serious obstacle and may be the determining factor" in the projects’ completion. Gilman and Gray managed to circumvent the Hills’s ill-effects and persuaded Secretary Lane to invest more reclamation time and money in the projects in northern Montana.25

James and Louis were not the only voices complaining about Frederick Newell. Many western politicians, settlers, and newspapers attacked Newell for wasting money and for resisting attempts to ease the repayment burden on settlers. In 1914 these complaints culminated in Newell’s firing. Although this must have provided immense satisfaction, the Hills remained silent and never claimed responsibility for the dismissal. Regardless of this long-demanded personnel change, the railroad men had no control over the Reclamation Service, its direction, or its employees.26

Having fought with farmers, the federal government, state universities, and booster groups, Hill found at the end of his life that even his own railroad had abandoned his vision of American agriculture. Shunned by others, Hill retreated into his original persona as an eighteenth-century gentleman farmer. He returned again to personal

24. Gilman to L. W. Hill, 26 October 1912; to Gray, 5 April, 20 and 26 May 1913; telegram, Gilman to Gray, 18 May 1913; H. N. Savage to Gilman, 2 April 1913; telegram, Gray to Gilman, 14 May 1913; telegram, William Bole to Gray, 6 June 1913, GNRP.
25. Savage to Gilman, 17 July 1913; Gilman to Gray, 26 September, 1913, GNRP.
experimentation, philanthropy, and influence investing his own estates with time and money. Although his broad concerns of diversification through dual-purpose cattle and soil conservation had not changed, his methods did reveal the infiltration of some new ideas.

Hill's estate Humboldt, in the Red River Valley, remained primarily a productive wheat farm. Under hired management, the farm continued to raise extensive crops. However, Hill faced problems with his traditional labor force: Canadians. In 1915 the Sheriff arrived at the farm in the middle of harvest and "took away four . . . shockers." They were charged as illegal aliens, but Hill's manager asserted that the men had been working the Humboldt farm without trouble for fifteen years. In writing to Hill for help, the farm manager added a desperate postscript, "Please act at once, as they have threatened to come again we may just as well let them have the crops." Hill turned to Minnesota Senator Knute Nelson for help. Nelson took the matter up with the Acting Secretary of Labor, J. B. Densmore. The arrests had been sparked by the onset of war in Europe and Canada's position as a Commonwealth nation. The manager claimed that the men were Galatians and consequently refused work in Canada. Densmore, however, asserted that the deportations were ordered on the basis that "they were persons likely to become public charges at their time of entry." Despite Hill's protestations, the men were deported back to Canada in September.27

Hill did not let the matter rest. He continued to use Knute Nelson to badger the Department of Labor. Hill asserted that immigration officials aimed to "make fees" by bothering "a number of poor men who . . . are trying to earn a living." Densmore corrected Hill by pointing out that the agents did not profit from arrests; he then closed the case and refused to make further inquiries. Thus by 1915, Hill's political influence had basically vanished. Without the muscle of the railroad, and with few federal connections, Hill found himself in the uncomfortable role of a private citizen, albeit a very rich one.28

27. Lohr Bros. to Toomey, 10 August 1915, Humboldt Farm Papers; J. B. Densmore to Nelson, 13 September 1915, General Correspondence, JJHP.
28. Densmore to Hill, 7 October 1915; to Nelson, 7 October 1915, General Correspondence, JJHP.
In addition to wheat farming in the Red River Valley, Hill returned to using his personal farms to promote his agrarian vision. Having profited considerably from the bonanza farming boom in the 1880s, Hill, in his seventies, decided to adapt his properties in the Red River Valley. Since the purchase of Humboldt, he had been selling the land off in small acreages, often equipped with new buildings to foster his vision of Jeffersonian yeomen.

Hill also used both the Humboldt and North Oaks farms to promote dual-purpose and blooded stock. Three thousand acres of the Humboldt farm was known as the Northcote division. In September 1910 Hill separated Northcote and placed it under the management of his youngest son, Walter. Walter Hill was a twenty-five-year-old reputed alcoholic, who was having trouble establishing himself. Walter told his father that he would like to try farming, so James gave him the project of turning the Northcote division into a huge cattle station.29

James Hill’s plans for Northcote returned to his early attempts at promoting agriculture. Walter would experiment with different kinds of cattle feeds and then inform farmers of profitable combinations. Hill also intended Northcote as a stock farm for breeding quality cattle. Both activities would help promote diversification through improvement and sale of available breeding stock. Thus, Hill once again tried to effect change through example. Under Walter, however, Northcote consistently lost money, undermining its efficacy as a demonstration farm.30

It is unlikely that James Hill expected Northcote to make a profit, so the substantial losses should not be automatically be blamed on Walter’s bad management. Stock breeding was expensive because of the high price of establishing a herd. In 1914, for example, the main expense for the farm was livestock purchases totaling $73,093.05. Separate from these costs was the building program Hill launched at Northcote in 1912 intending to equip the farm with the necessary buildings to make it a modern feed experiment station. By August of 1914, Hill had constructed a cattle barn, silos, a

30. In 1911 Northcote lost $12,497.61; in 1912 $12,030.65; in 1913 $22,781.78; and in 1914 $58,968.38. Dickman, “James Jerome Hill,” 314.
Although officially handing the running of Northcote over to Walter, Hill characteristically remained involved. With the increasing tensions in Europe, legal problems arose in the United States over the use of commonwealth citizens, including Canadians, on Hill's farms. The problem began in 1913 when some of the imported cattle at Northcote developed a skin disease. Against Walter's wishes, Hill insisted on hiring a Canadian veterinarian recommended by Shaw, again working through his subjective network. The veterinarian cured the cattle, but when Walter tried to hire him he ran into problems with the Immigration Bureau. In March 1914 James Hill wrote a long letter to Minnesota Senator Knute Nelson, asking him to intervene in the matter, but with no success.32

In the last years of his life, Hill resumed his educational endeavors in the Red River Valley but with no more success than earlier. Although Northcote did keep Walter occupied, it failed to persuade northern tier farmers of the importance of stock-raising. In the 1880s they had passively refuted Hill's claims to agricultural expertise. Thirtysome years later their perspective had not changed; in fact it had gained considerable ground from by Progressive ideology, and Hill never saw his plans for Northcote's development as a stock farm reach fruition.33

Hill's personal interest in livestock had regained momentum through association with Thomas Shaw. In addition to working for the railway and for the Northern Pacific, Shaw helped Hill with his personal agricultural endeavors. Like Hill, Shaw was convinced of the efficacy of dual-purpose cattle and, under his tutelage, Hill resumed his development of an effective breed. Shaw also helped reverse some of Hill's earlier ideas. Instead of starting with basic beef cattle, such as shorthorns, and then

31. Unbound typed financial records, Humboldt Farm Papers, JJHP.
32. Hill to Knute Nelson, 30 March 1914, Letterpress, JJHP.
33. Dickman, "James Jerome Hill," 313; Lohr Bros. to Toomey, 12 September 1915, Humboldt Farm Papers; Hill to K. J. Cahill, 1 March 1913, General Correspondence; Bill of Sale, 2 January 1917, Northcote Farm Papers, JJHP. When Hill died in 1916 Humboldt was sold off in sections and Northcote was sold to John Lohr who had managed Humboldt since 1909. Lohr paid $208,918 for four thousand acres, which included the Northcote farm, and $75,000 for animals, machinery, and other sundries.
breeding them for increased milk quality and yield, Shaw suggested working with dairy cattle to develop "good beef points."\(^{34}\)

To build such a herd, Hill sent A. W. Shaw to England in 1913 to buy cattle and horses. The stock arrived in Quebec where problems arose with quarantine and tuberculin certification. A. W. Shaw eventually had to go to Washington, D.C. to sort out the problem. The stock remained in Quebec for a month while bureaucratic knots loosened. A. W. Shaw did not accompany the cattle to North Oaks, having accepted an assistant professorship at the University of Saskatchewan. The next year Thomas Shaw himself went to England to buy cattle and to hire cowhands. He purchased fifty Shorthorn bulls costing $17,345. Only five of these stayed at North Oaks; most were distributed along the lines of the Great Northern and Northern Pacific, with much more success than Hill's earlier distribution attempts.\(^{35}\)

At the same time as Hill revived his interest in breeding cattle, he also resumed breeding other farm animals at North Oaks. New livestock registers detailed the purchase, breeding record, and death or sale for various breeds of pigs, sheep, and horses. By the time of his death, North Oaks was once more a thriving stock farm, breeding high quality stock available to the average farmer both through Hill's distribution scheme and through stud service.\(^{36}\)

Hill renewed his interest in experimentation. Despite his rejection of modern strictures on agricultural expertise, Hill had always supported the notion of scientific agriculture, and his internalization of changing scientific practices became apparent in the work at North Oaks. Unlike the experiments conducted in the 1880s, those in 1914 were more systematic with better record-keeping. The dairy started to keep weekly records of: pounds of milk received; average test of milk; pounds of cream received; average

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34. Thomas Shaw, Biography Files, Institute of Agriculture--Director's Office Papers, University of Minnesota Archives, Minneapolis, Minn., (hereafter UMA); Toomey to Robert S. McPheeters, Helena, Minn., 15 August 1899, General Correspondence, JJHP; Saint Paul Pioneer Press, 2 March 1914.
35. Pyle, The Life of James J. Hill, 350; A. W. Shaw to Toomey, 4, 12, 14, 15, 18, 20, 22, and 24 October and 21 November 1913; Inventory, 1914, North Oaks Papers, JJHP.
36. 1911-1916 saw a livestock register for Suffolk Punch horses, 1913 one for Duroc Jersey pigs, and 1912 for Oxford Down sheep. Livestock Registers, JJHP.
test of cream; pounds of butterfat from cream; and pounds of butter made. Two months later the same records were started for grade as well as thoroughbred cows. The farm experimented with different types of feed. The farm superintendent proposed feeding milkers a mixture of oats, barley and cow peas after the grass died in the summer. Also Hill utilized Crane of the Great Northern agricultural extension department at North Oaks. Crane's studies for the railroad involved fertilizer work, and he frequently used North Oaks for testing.37

For many years North Oaks had mainly been a family retreat, but, by the time of Hill's retirement, his children had lost interest in the property, although this would change after his death. The farm did retain importance in providing supplies to the ever-expanding list of family residences. The farm also retained its intrinsic appeal for Hill and his wife Mary. When the original wood frame house burnt down in 1912, Hill replaced it with a large brick dwelling reminiscent of his mansion in St. Paul. He also built new greenhouses and spent $2,556.50 on ornamental landscaping.38

In these later years, North Oaks regained importance as part of Hill's larger agricultural vision. When the railroad abandoned its idiosyncratic farming development policies, adopting a more mainstream Progressive approach, Hill returned to his position as a gentleman farmer utilizing North Oaks for experimentation and demonstration.

By the time of his death Hill had come full circle in his attitudes about farm development. He had returned to using his personal farms as laboratories to explore his agricultural ideas, which he then disseminated through his speeches as well as through the philanthropic distribution of stock. This reversion was also apparent in his attitude toward agricultural development and education on a national level.

Resuming action independent of the railroad Hill, in 1913, became chairman of the advisory committee of the National Soil Fertility League. Started in 1911, the League promoted agricultural education and was heavily

37. Toomey to Finneman, 3 February, 10 March, and 17 April 1914; Crane to Toomey, 27 April 1914, North Oaks Papers, JJHP; Dickman, "James Jerome Hill," 129.
38. R. H. Pinnow, gardener, to Toomey, 17 January 1914; Bill from Jewell Nursery Co., Lake City, 3 March 1914 and from Hoyt Nursery Co., St. Paul, 10 April 1914, North Oaks Papers, JJHP.
funded by railroads. The advisory committee included William Taft, William J. Bryan, Charles Van Hise, W. D. Hoard, John H. Worst, and Henry Wallace. The principal aim of the organization was the enactment of the Lever Bill or, as it became known, the Smith-Lever Act. This bill proposed to give federal support and structure to agricultural extension programs that had been inaugurated by various institutions at the turn of the century. 39

Hill's attraction to the concept of extension stemmed from his longstanding distrust of academic teaching. He and many others, felt that universities had neglected actual farming needs, postulated impractical systems, and patronizing farmers. In 1908 Hill had lent his support to the Dolliver-Davis Bill, which proposed a system of federally funded agricultural high schools. Hill hoped the bill would offer more practical agricultural education, but it had not passed. 40

Changing his focus to extension, Hill championed the same cause of education. In 1911 he financially supported the Better Farming Association in North Dakota, which instituted an extension program in that state. Through the Lever Bill, Hill hoped that new scientific methods of farming could be disseminated in a more realistic and effective fashion on a national level. He wanted extension to address practical farming issues, being "impressed with the possibility of work done by the farmer on his own land with his own hands under the direction of some one who knows of his own practice and not of what he has been told or what he has read out of books or newspapers." 41

This vision allied closely with Hill's ongoing belief in the efficacy of demonstration farms. It also showed Hill's disgust with official agricultural education, yet paradoxically, he believed that the federal government should remain responsible for this education. Such dichotomies had permeated his entire life. A believer in scientific and technological progress and expertise, Hill nevertheless saw agricultural knowledge as

40. Letter from Willet Hays, 1 October 1908, UMA. Many of the components of the Dolliver-Davis Bill were embodied in the Smith-Hughes Act passed the year after Hill's death.
41. Hill to Gross, 27 October 1913, General Correspondence, JJHP.
being gained through experience rather than formal teaching. By advocating
a national extension service, Hill sought a middle ground where
professionals could guide the experiential knowledge of farmers.

Hill’s support of federal extension revisited his earlier contention
that university professors were not fulfilling their professional mandate.
Like many other “non-academics,” he thought that productive farming could
be guaranteed by individualized fertilizer prescriptions and good seed.
University personnel should have provided this soil analysis and seed
breeding, but instead they complained that these mundane demands of farmers
for routine analyses cut into their research time. The Smith-Lever Act
thus succeeded in straddling both camps. For those with Hill’s perspective
the act provided a type of agricultural education and support which
universities were reluctant to supply. For university personnel and their
colleagues in the Office of Experiment Stations, the act freed them for
research, passing educational responsibilities to the extension service.42

James Hill’s retirement from the board of the Great Northern Railway
in 1912 marked the culmination of his “great adventure” and heralded his
return to an earlier agricultural policy. With his retirement, the
railroad gradually changed its development programs. Moving away from the
social vision of Hill to a narrower economic focus, it paid less attention
to changing agricultural trends and more to maximizing profits from
existing practices. The railroad’s industrial department also increasingly
mirrored university agricultural departments. As James Hill receded from
everyday corporate affairs, the corporation began to accept Progressive
notions of expertise and focus attention on academic and federal experts
rather than the self-taught experts of Hill’s day.

Diverging from the railroad policy for the first time, Hill returned
to his position as a gentleman farmer. Once again he used his farms for
experimentation and development, and his reputation as a teaching tool. A
crusty old man, who had largely lost his political influence, Hill
continued to berate agricultural practices and agencies with which he

42. Charles Rosenberg, No Other Gods: On Science and American
Social Thought (Baltimore: Johns Hopkins University Press, 1961), 141-84.
disagreed. Popular as a speaker, he maintained a forum for his ideas, which became an increasing liability for the Great Northern.

The failure of the elderly Hill to assume the position of a wise philanthropist among the farmers of his territory was compounded by his loss of political influence. By World War I the “Empire Builder” had lost control of his empire, as international politics and immigration regulations superseded his authority.

Hill moved no closer to realizing his agrarian Eden. His vision of the Plains populated by Jeffersonian yeomen, practicing scientific agriculture taught to them by fellow farmers employed by sympathetic universities and federal bureaus, remained unattainable. A legend in his own lifetime, James Hill was valued as a character, a pioneer figure, and an empire builder, and his interest in farming was well-known and appreciated. In terms of validity, however, he had become an anachronism and, when he died, the railroad made a considerable effort to disassociate the corporation from his agricultural ventures.
The verdict of historians regarding James Hill's agricultural endeavors has been incredibly varied, but all have agreed that he had considerable impact, whether positive or negative, on farming practices in the territory of the Great Northern Railway. Joseph Gilpin Pyle, Hill's official biographer, claims that "The agricultural interest of the United States owes a lasting debt to the enthusiasm and the life-long labours of James J. Hill." Pyle portrays Hill as "a pioneer of conservation," talks of farmers exposed to his ideas as "converts," and as a prime instigator in the development of formal agricultural education.

Hill's later biographer, business historian Albro Martin, largely ignores his agricultural ventures. When he does address them, however, he does not question Hill's authority or the inherent validity of his agricultural vision.

Martin largely left Hill's farming interests to his graduate student, Howard Leigh Dickman who, in 1977, finished his dissertation entitled, "James Jerome Hill and the Agricultural Development of the Northwest." Dickman, although acknowledging the failure of Hill's agricultural vision in the long term, never questions his influence on the major farming movements of his time, irrigation, conservation, and dryland farming.

This view is upheld by Roy V. Scott who states that "Hill's reputation as a developer of [agriculture in] the Northwest was well deserved" and who holds Hill largely responsible for the flood of dryland farmers to Montana in the 1910s. In Michael P. Malone's new and readable biography of the railroad man, Malone portrays Hill as an influential "advocate of model demonstration farms" and as leaving an "enduring

from his "imperial promotion of modern agriculture across the breadth of his domain."^5

Historians critical of Hill’s agricultural involvement also give credence to his influence. Montana historian, Joseph Kinsey Howard, blames Hill for the huge influx of settlers into Montana, claiming dry farmland. He argues that Hill was thus responsible for the extent of the subsequent disaster, when a period of low rainfall from 1917 to 1922 resulted in the bursting of the dryland farming bubble and the bankruptcies of thousands of homesteaders.^6

This historiographical tradition leaves us with two questions: to what extent did Hill’s agricultural vision become a reality, and how influential was Hill on agricultural change during his lifetime?

James Jerome Hill believed in the necessity to populate the northern tier with small-scale yeomen farmers. These farmers, he envisioned, whether on reclaimed land or dryland, would practice diversified, efficient, scientific agriculture. Their work would be governed by basic, accessible principles, with agricultural experiment stations providing support in the form of soil analysis and continued experimentation.

Hill had a variety of intertwined reasons for establishment of this dense rural settlement. Like others during the Progressive era, he saw migration to the farm as one of the solutions to urban decay and political corruption. The Country Life Movement and the Back-to-the-Land movements among others, based this view in the Jeffersonian ideal of country life. Independent farm life provided the most natural setting for man and, as such, the best training for active democratic participation.

As well as providing a solution to the nation’s urban and political problems, an increased farm population, according to Hill, would meet the growing food needs of the nation. Calculating American population growth on the basis of the incredibly high immigration figures at the turn of the century and worried about the decline in productivity of the nation’s


soils, Hill predicted a time when the food supply would prove insufficient. The steady migration of rural people to the cities heightened this worry. Only by reversing this migration and returning to intensive, diversified agriculture, could America avoid becoming dependent on other nations for its food.

Hill visited his concerns and solutions in many speeches. In 1913, he succinctly summarized his agrarian philosophy. "The change to a more intensive system, smaller farms, less ground planted to wheat, more to coarse grains and to forage plants, the keeping of cattle, the higher cultivation of the grain-producing area by soil study, fertilization, better tillage and all the methods included in modern scientific agriculture, will create a revolution in farm industry and at least double present yields and profits."\(^\text{7}\)

Hill combined his Jeffersonian agrarianism and Malthusian pessimism with the fundamental pragmatism of a successful businessman. Recognizing early on that the territory of his railroad was most suited to agricultural production he wanted it as densely settled as possible to maximize haulage both ways along the lines.

Hill was not alone in his concerns for rural America nor in his prescriptions. Many social critics identified the flight to the cities as one of the key problems confronting America, undermining democracy, and increasing crime and moral degradation. This fear manifested itself on a federal level with Theodore Roosevelt's Country Life Commission. Many also tried to rebuild the Jeffersonian yeoman. The back-to-the-land movement fostered exactly the same kind of dense, rural settlement as Hill envisioned.

Economic and technological factors ultimately thwarted these reformers. Mechanization, hybridization, fertilizers, and pesticides increased the transition to agricultural economies of scale. Monocropping remained feasible and popular, and rural labor needs diminished. Instead of regaining a place in the national economy, small-scale family farms found it hard to survive. The labor, released from these farms and from technological replacement, continued to flow to the cities.

Although concern about American rural life would continue into the 1990s, the idea that the Jeffersonian yeoman had to be upheld to save the nation had waned by the time of Hill's death. With the transition of America to an urban nation, as indicated by the census of 1920, those struggling with large-scale social reform focused their attention on the problems of the cities. The federal government continued to articulate a desire to save the family farm until the late 1960s, after which it increasingly treated rural poverty as problem of welfare rather than farming, but governmental support of agricultural economies of scale countered this apparent concern. Gradually the attention paid to reforming rural life metamorphosed from a need to uphold the nation's democratic spirit to a patronizing concern for the underdog. As early as 1956 with Eisenhower's soil-bank plan, some government officials had shifted to the belief that the best cure for rural ills was indeed to move the surplus population to the cities.\(^8\)

Hill's Malthusian vision of a nation unable to feed itself was more idiosyncratic than his desire for a densely populated countryside, but proved no less false. America's food production continued to grow, helped by science and technology. At the same time, the immigration rate, on which Hill had grounded his pessimism, declined sharply with legal restrictions and the advent of World War I. The Great Northern, Hill's fundamental concern, continued to make considerable profit from agricultural haulage, which remained one-third of its business until after World War II.\(^9\)

In fact, the problem which confronted American food production in the twentieth century reversed Hill's predictions. From the rural depression of the 1920s on, the nation suffered from chronic overproduction. Farmers compensated for low prices by increasing productivity, which, in turn, further depressed prices. The federal government made various attempts to cure this problem from Henry A. Wallace's directed plowing under of crops and slaughter of hogs, to price supports and purchase of farm surplus. But, despite the development of a global economy, the problem remains.

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Hill's vision of an densely settled rural America failed to become reality. But perhaps it is unfair to judge his influence, or lack of it, on the basis of the developments of American agriculture after his death. This returns us to our second question: to what extent Hill facilitated agricultural change during his lifetime, both on an institutional and grassroots level.

Some evidence suggests that Hill had substantial influence on farmers. He was in great demand as a speaker, and local officials remarked on his expertise in introductions. Private letters testified to the effectiveness of Hill's images. In 1902 Edward Tuck told him, "it looks as though you know more about the farmers' business than the farmer does himself."

Other evidence points to considerably less success. Hill and his railroad did not escape attack from the various farmers' movements, such as the Grange, that swept the nation in the late nineteenth century. From 1882 to the end of the decade, Hill stayed in St. Paul when the legislature was in session to oppose passage of granger laws. Toward the end of his life, the Great Northern faced opposition from the Nonpartisan League in North Dakota. In both cases, the farmers rebelled against railroad dominance in the state's economy. All of Hill's rhetoric about being one of the farmers did not prevent attacks on the Great Northern.

Another way of assessing Hill's influence is the extent to which farmers adopted the systems he promoted. Probably dryland farming was the most successful idea he advocated. Favored by all railroads on the Great

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10. Malone, James J. Hill. 186, 192-4; Scott, Railroad Development Programs. 35; Edward Tuck to Hill, 31 December 1902, General Correspondence, James J. Hill Papers, James J. Hill Library, St. Paul, Minn. (hereafter JJHP).
Plains, it also received approval from the experiment stations of the Great Plain states and the USDA. This general endorsement of the principles of dryland farming make it impossible to quantify Hill's influence, but also make it certain that it was far from unilateral.12

Similarly, successful irrigation hinged on factors other than Hill's advocacy. Consistent failure of private and state irrigation schemes made federal involvement necessary. Certainly, the National Irrigation Association, which included Hill among others, launched a useful lobbying campaign, but the impetus toward governmental involvement was already extant. The limits on the association's influence became apparent with their subsequent failure to modify the homesteading laws.

Hill's disillusionment with the Reclamation Service and his attempts to alter its irrigation priorities and its personnel met with continual failure. Without strong public opinion and a structured lobbying mechanism, his institutional influence completely dissipated. Similarly, despite his hopes after being invited to the Governors' Conference on conservation at the White House, Hill soon realized that he would have no success in changing the direction and aims of the national conservation movement.

Even philanthropy on a grand scale failed to alter farming practices as Hill wished. Believing that livestock would supplement farm income and provide valuable manure, Hill advocated the breeding of good quality animals to provide substantial quantities of milk as well as high quality meat. To this end, he gave purebred imported bulls to farmers along his line in the 1880s.13

Hill's efforts failed as farmers throughout the Great Northern's territory refused to diversify. Reluctant to invest the time necessary to maintain quality stock, they usually slaughtered or sold the livestock Hill donated. Although some farmers continued to keep scrub cattle for home consumption, a concerted interest in mixed farming never materialized.14

Hill understood that his influence proved less effective than he wished. Although his speeches celebrated farmers as the salt of the earth, he privately expressed exasperation, complaining about their resistance to scientific agriculture and stating that "Minnesota farmers have never shown a disposition as a whole to help themselves." 15

Hill, himself, implicitly recognized his failure to influence agricultural change. For the last thirty-eight years of his life he adopted a wide range of methods to try to influence farming practices. As each method failed in turn, he altered his approach, adopting new strategies.

His key problem was how to establish himself as an authority to be followed. Initially he addressed the farming population directly, working from the position of a gentleman farmer. Finding this ineffective and costly, he shifted to creating alliances with other institutions, hoping to thus gain the authority necessary to effect change. This proved effective for a brief period leading up to the Newlands Act of 1902. The early twentieth century saw this policy breaking down as the allied institutions moved in directions antagonistic to Hill's beliefs and goals and he found that he lacked any control. As the alliances disintegrated, Hill established his own agricultural institution within the corporation of the Great Northern to give his ideas credence. However, farmers clearly perceived the vested interest of the Development Department, and cooperated or otherwise based on information received from other sources. Finally, as the management of the Great Northern began to alienate themselves from Hill's ideas and mission, the old man resorted to isolation, resuming his role of gentleman farmer.

Hill's quest for agricultural authority proved elusive not because of his own inadequacies but because of the changing nature of expertise during his lifetime. Involved in a national struggle for the right to dictate the future of American agriculture, Hill ended up on the losing side with the

15. John J. Toomey to James McClure, 24 January 1900, North Oaks Papers; Toomey, 16 February 1899, General Correspondence; Hill to Christopher Stevenson, 17 March 1886; to John M. Martin, 26 November 1886; to H. W. Donaldson, 19 June 1893; to M. S. Merager, 21 May 1889; to C. L. Goodell, 6 June 1908, Letterpress Books, JJHP.
farmers. The laurels went to the academics and bureaucrats of the federal government.

Hill supported the idea of expertise in agriculture, but he opposed the narrowing of the term “expert.” While never denying the importance of agricultural scientists and their institutions, he believed that farming expertise could also come through experience, thus qualifying himself and other farmers as experts. The science necessary for good farming was, Hill thought, easily within the reach of farmers. “It is true that the best methods of soil treatment and crop growing are scientific; but they require only that form of popular science which is within the comprehension and use of the uneducated man.” He thought that most of the principles necessary to improve agricultural production in the United States were self-evident and could be learnt by any observant, hardworking farmer.16

In addition, he agreed with farmer criticism that the universities often indulged in theoretical and impractical work. His willingness to criticize these institutions varied during his life. While never dismissing them altogether, he certainly pointed out the limits of their help in practical agricultural development, especially when feeling thwarted by universities or their personnel in implementing his vision. In 1911, for example, when financing the Better Farming Association’s aims to provided a system of extension agents in North Dakota, Hill offered this patronizing view of university education. “Now, I do not want to take a shingle off the roof of an agricultural college in the world. I feel kindly toward them. I do wish that in place of putting on their spectacles and looking wise and talking in scientific terms and giving you the botanical names of plants and telling you they originated in some distant island of the sea, that they would get down and tell you what you can do on your own farm where you live.”17

His actions and speeches reflected this dichotomy; while praising the work of agricultural scientists, he consistently attacked agricultural educators for their failure to convey simple improvements to the farming population and for their resistance to expertise gained through farming. Hill’s agricultural isolation by the time of his death in 1916 demonstrated

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17. James J. Hill speech in Williston, N.D., 27 November 1911, LWHP.
the triumph of a narrow definition of "expertise," and the alienation of farmers from primacy within their own profession.

By 1916 it was clear that the academicians and their political cohorts at the United States Department of Agriculture had seized control of the development of American agriculture. In capitulation, Hill's successors established a railroad agricultural department modeled after the university system, staffed it with academics, and fired the remnants of Hill's praetorian guard.

It would be wrong to assert that Hill had no influence over agricultural change. He was an intelligent and rich man whose railroad was significant enough to guarantee him at least an audience for his opinions. However, Hill's influence proved minimal. Changes in the conceptualization of agricultural authority during the Progressive era left Hill chasing an illusive expertise. Although supporting some successful movements, Hill consistently failed to implement change without additional endorsement of experts whether from the government or academe.
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