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## A History of Coal Development in North Dakota

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A HISTORY OF COAL DEVELOPMENT IN NORTH DAKOTA

by

Colleen A. Oihus

Bachelor of Arts, University of North Dakota, 1975

A Thesis

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Arts

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This thesis submitted by Colleen A. Oihus in partial fulfillment of the requirements for the degree of Master of Arts from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

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## TABLE OF CONTENTS

Acknowledgements . . . . .	iv
List of Tables . . . . .	vi
Abstract . . . . .	vii
Introduction . . . . .	1
Chapter I. The Lignite Frontier 1804-1873. . . . .	5
Chapter II. The Fledgeling Industry 1873-1900 . . . . .	22
Chapter III. The Busy Years 1900-1920 . . . . .	56
Chapter IV. Changing Times 1920-1941. . . . .	97
Chapter V. North Dakota Coal Since 1941. . . . .	153
Appendix A. Map 1. The Route of the Lewis and Clark. . . . .	168
Expedition in North Dakota	
Map 2. Points Served by the Steamboats on. . . . .	169
the Upper Missouri River.	
Map 3. Military Posts of the Upper Missouri, . . . . .	170
1865-1880.	
Appendix B. Map 4. The Cities and Towns of North Dakota	
Engaged in the Production and Consump-	
tion of Lignite Coal, 1873-1900. . . . .	171
Appendix C. Map 5. Coal Mining Towns 1920 . . . . .	173
Appendix D. Statement of Operations of Mines Under State	
Control for Period November 14th to December 5,	
1919. . . . .	175
Bibliography . . . . .	178

LIST OF TABLES

Table	Page
1. Net Results of the Northern Pacific Coal Company's Baby Mine . . . . .	33
2. North Dakota Lignite Coal Mines, 1873-1900 . . . . .	44
3. Lignite Coal Rates on the Northern Pacific Railroad Effective January 30, 1890 . . . . .	48
4. Maximum Rates for Transportation of North Dakota Coal Effective March 3, 1890 . . . . .	49
5. Maximum Rates Under Chapter 93, Laws of North Dakota Effective March 21, 1895 . . . . .	51
6. Coal Mine Statistics 1910-1920 . . . . .	72
7. Maximum Rates Under Chapter 146, Laws of North Dakota Effective March 10, 1903 . . . . .	78
8. Maximum Rates for the Carriage of Lignite Coal Effective September 4, 1915. . . . .	82
9. Chemical Analyses and Calorific Count. . . . .	93
10. Gas and Residue Analysis . . . . .	94
11. Active Lignite Mines in North Dakota, 1920-1939. . . . .	100
12. Production Record of the Knife River Coal Mining Company, 1925-1929 (Tons). . . . .	124
13. Production Record and Average Price of Lignite, 1929-1939 . . . . .	129
14. Number of Active Lignite Mines in the State's Lesser Productive Counties, 1929-1939 . . . . .	134
15. Natural Gas Consumed in the United States and in North Dakota, 1934-1941. . . . .	149
16. Sales of Fuel Oil in the United States and in North Dakota, 1934-1941. . . . .	150

## ABSTRACT

Lignite coal, one of North Dakota's natural resources, is at the present time an issue of great concern for North Dakotans. This thesis explores the historical stages in the development of the lignite industry. During the 1804-1873 era, lignite was only an object of curiosity to the frontier element. As the frontier receded, the outlines of the lignite industry began to take form. From 1873 to 1900, large underground coal mining companies and smaller operations grew in number and size. The railroad freight rates on lignite shipments caused problems for the young industry during the 1890's.

The early twentieth century witnessed the rise in the coal towns and an expansion in the size of mining factories. A labor strike and continued controversy over the railroad freight rates characterized the 1900-1920 period. From 1920 to 1930, the steam shovel demonstrated the effectiveness of the strip or surface method of mining, and it revolutionized the industry. During the Great Depression of the 1930's, the lignite industry suffered reverses, yet the depression also caused the federal government to finance coal research programs. The competitor fuels, oil and natural gas, began to diminish the lignite market during the 1930's. As a result, the lignite industry began to search for a new market. By 1941, the industry had discovered the future use of the soft coal in the production of electrical energy.

From the advent of World War II until the early 1960's, the coal industry made little progress, primarily because of the increased use of



oil and natural gas. With the realization that the supplies of oil and natural gas were limited, however, the nation turned to its coal resources; and since the mid-1960's, lignite has become much more important. But the increase in the use of lignite in the production of electrical energy, and its future utilization in the manufacture of natural gas, have also caused great concern among North Dakotans. The amount of lignite necessary to supply the existing and the proposed electrical generation and coal gasification plants will leave an impact upon the socio-economic structure and upon the environment. This impending development has become a major controversy in the state.

## INTRODUCTION

The geologic stratas of North Dakota hold a valuable natural resource in the form of lignite, a dark brown, low-grade variety softer than ordinary bituminous coal. Lignite is now a major source of electricity, and its use in the energy field will continue to grow. Soon it may become an important source of synthetic natural gas. The impending exploitation of North Dakota's vast lignite fields in response to a national energy crisis is not a development that meets with universal approval, however, and the ecological, social and economic ramifications of intense strip mining have launched a major controversy in the state.

In view of the present controversy, and in light of what coal may mean in the future development of North Dakota, there is a need to know the more detailed history of lignite mining in the state. Apart from the few authors who have described particular features of lignite mining in journal articles, county historical society newsletters, and newspaper reminiscences, there has been no extensive and systematic study on the extraction and use of lignite. This thesis, therefore, is an attempt to delineate the historical stages of coal mining in North Dakota from 1804 to present. The study concentrates on the principal mining enterprises and on the problems associated with the growth of the lignite industry.

Chapter I covers the frontier period, which lasted from 1804 to 1873. During that era, lignite was only an object of curiosity. It invited tests of its combustibility, but rarely was the coal used on a regular basis. Chapter II investigates the rise of the fledgeling industry

prior to 1900, the successful mining ventures and the failures, the wagon mines and the larger coal companies. It notes its mention in promotional literature as one of the territory's major assets during early settlement and also explores the controversial issues surrounding the railroad rates for shipping the coal during the 1890's.

Chapter III describes the busy years of lignite mining from 1900 to 1920. It was a colorful era, when the industry grew to maturity. Mining factories expanded in size and number and the coal towns made their debut. Progressive legislation enacted by the state's lawmakers established a code of regulations for a safe recovery of the coal. The era was also characterized by a labor strike and continued debates over the railroad tariff on lignite shipments. Research into the coal's chemistry revealed a worth to the technological world far beyond its traditional value as a heat source.

Chapter IV examines the many changes that occurred from 1920 to 1941. The steam shovel was the symbol of the era and it made strip mining profitable and popular. It revolutionized the mining industry. The economic depression of the 1930's forced reverses upon the industry, yet the depression also caused the federal government to finance extensive coal research programs and other related projects. The steam shovel and the Great Depression occasioned clear and rather quick changes within the industry, but reasonably concealed within this era was another force of change. Early in the period, oil and natural gas began to diminish the lignite market, and eventually it caused a decline in the number of active mines. Accordingly, the lignite industry began to search for a new market. By 1941 the industry had discovered the imminent usefulness of the soft coal in the production of electrical energy.

From the advent of World War II until the early 1960's, the coal industry made little progress in the energy field, primarily because of the increased use of oil and natural gas. The nation and the state soon realized, however, that the supplies of oil and natural gas were limited. They also realized that a shortage of the fuels would lead to an energy crisis, and so they looked to the vast lignite beds for salvation, should such a crisis develop. Since the mid-1960's lignite has been on the brink of an important development. Its role as a low-cost energy catalyst has already been demonstrated, and its use as a chemical raw material in the manufacture of methane or synthetic natural gas will also grow on a quantum scale.

Chapter V of this study summarizes the events that have characterized the North Dakota lignite industry since 1941. The details of the recent period, however, remain the subject of a separate study. In any event, it is now clear that mining the massive amount of lignite necessary to supply the electrical generation and gasification plants will have a lasting impact on the land, the air, and the water in North Dakota. Thus, though many individuals have suggested that lignite could change or diversify the state's economy and that coal would be North Dakota's future, in the more recent time, politicians, environmentalists and concerned North Dakotans have been inclined to consider as well the price that may have to be paid for economic progress. In terms of cost and benefit, what kind of progress will the brown coal bring? Will it add an industrial dimension to the agrarian economy? How much energy should North Dakota be expected to produce for use in the Metropolitan areas? What kind of overall impact will this development have on the people of North Dakota? These are complex questions that have not been fully

answered thus far, and are part of an ongoing investigation. A detailed analysis of the period since 1941, therefore, will have to be dealt with by a future historian.

## CHAPTER I

### THE LIGNITE FRONTIER 1804-1873

#### Captains of Discovery, Steamboat Pilots, and Soldier-Doctors

The frontier period in the development of North Dakota's lignite coal encompassed several different aspects. Lewis and Clark, of the much celebrated expedition, appear to have been among the first users of North Dakota lignite. The steamboat pilots who navigated the waters of the Missouri River experimented with lignite, and usually the brown coal did not meet their approval.<sup>1</sup> The personnel at the military establishments

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<sup>1</sup>The varied results of the experiments performed by these frontier people, which will be related in the following pages, were due to several different factors. Several people received favorable results. Yet others remained unfavorable. These negative conclusions were most probably due to a deficiency or a reduction in the heating power of the coal. This reduction in power may have been due to either one or a combination of the following seven factors: 1) The lignite they tested may have had a high moisture content. 2) The coal may have slacked before it was burned. Slacking refers to the rapid drying out of the wood cells within the coal. This evaporation in turn causes the lignite to break up into smaller pieces and eventually into a powder. 3) The coal may have slacked when it was burned. 4) The lignite may have had a high sulfur content. 5) It may have had a high percentage of inorganic or incombustible matter, referred to as the ash content. 6) The size of the coal lumps that they burned may have been too large. The most advantageous size is approximately six inches. 7) Because the quality of lignite varies considerably from one area to another, these people were simply either lucky or unlucky in relation to the coal they experimented with and the results they obtained. All of these factors, either separately or combined, would have reduced the proficiency of the lignite. For more information see U.S., Department of the Interior, Bureau of Mines, Economic Methods of Utilizing Western Lignites, by Earle J. Babcock, Bulletin 89, (Washington, D.C.: Government Printing Office, 1915), pp. 6-9; U.S. Department of the Interior, Bureau of Mines, Coal, by Reinhardt Thiessen and David White, Bulletin 38, (Washington, D.C.: Government Printing Office, 1913), p. 6; Earle J. Babcock, Lignite, Best Methods of Storing and Burning, (Issued by the Board of Railroad Commissioners of North Dakota, n.p., n.d.), pp. 1-6.

that occupied strategic positions along the Upper Missouri River also experimented with lignite, and at Fort Stevenson, the coal was used on a regular basis. In the end, whether or not these people utilized the coal was not as important as the fact that they thought about it and suggested what this natural resource could do for the future state of North Dakota.

Meriwether Lewis and William Clark began their historic exploration of the Missouri River in the summer of 1804. They traveled the course of the river in one keelboat and in two large pirogues or double masted boats. The expedition entered the future state of North Dakota on October 13, 1804. Shortly thereafter, they reached the earthlodge villages of the Mandan and Hidatsa Indians. These villages were located at the confluence of the Missouri and Knife Rivers.<sup>2</sup> Upon their arrival, the explorers received a warm welcome and a display of friendship from the Mandan Indians. On November 3rd, the explorers began construction of their winter camp only a short distance from the Indian villages. They remained at this cantonment, aptly named Fort Mandan, until the following spring.<sup>3</sup>

One of the prime objectives of the Lewis and Clark expedition was to secure the loyalty of the "red children." With the acquisition of Louisiana, President Thomas Jefferson decided that the "captains of discovery" not only explore the region for scientific purposes but also explain to the various Indian tribes the sovereignty of the United States and that the tribes owed their allegiance to the "Great American Father," and not to the French and Spanish.<sup>4</sup> The Mandan Indians were no exception.

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<sup>2</sup>For locations of specific sites in this chapter, see maps in appendix A.

<sup>3</sup>Elwyn B. Robinson, "Lewis and Clark--The North Dakota Phase," North Dakota Quarterly 24 (Winter 1956): 7-10.

<sup>4</sup>Ibid., pp. 5, 7.

Throughout the winter, Lewis and Clark attempted to fulfill the President's request. One manner in which they tried to insure Mandan loyalty was through the use of the blacksmiths that accompanied the explorers, and lignite served as the catalyst in this objective.

On Christmas Eve of 1804, the members of the expedition erected a blacksmith shop within the triangular confines of Fort Mandan.<sup>5</sup> The fuel used to fire this forge was lignite discovered on the banks of the Knife River. The procurement of this fuel became a daily exercise for the inhabitants of the fort. For example, on January 24th, 1805, Clark recorded in his journal that he "sent out Several hunters, they returned without killing anything, Cut Coal wood." On the following day he wrote, "men employ'd in Cutting the Boat out of the ice, and Collecting Coal wood." Again, on the first day of March, Clark noted that it was "a fine Day I am engaged [sic] in copying a Map, men building perogus [sic] , makeing [sic] Ropes, Burning Coal, Hanging up meat & makeing [sic] battle axes for Corn."<sup>6</sup>

Throughout the winter months, the Mandans and Hidatsas congregated at the fort, bringing with them their broken implements and also foodstuffs as payment for the repairs rendered by the blacksmiths. On February 5th, 1805, another journalist in the expedition, Sergeant John Ordway, recorded: "the Coal being ready for the blacksmith to work the Savages bring corn to have their war axes made & to get Scrapers to dress buffaloe Robes. . ."

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<sup>5</sup>Milo M. Quaife, ed., The Journals of Captain Meriwether Lewis and Sergeant John Ordway, (Madison: State Historical Society of Wisconsin, 1916), p. 174.

<sup>6</sup>Reuben G. Thwaites, ed., Original Journals of the Lewis and Clark Expedition 8 vols. (New York: Dodd, Mead and Company, 1904), vol. 1, pp. 251, 268.



Also, Ordway indicated that this exchange of the blacksmith's expertise for provisions was almost a daily occurrence when he noted in his journal for March 2nd that, "the savages continue to visit us in Order to git [sic] their Impliments [sic] of war made. they bring us in pay corn and beans dried meat & persimblans [sic]. . . "7

Clark also noted in his journal the many visits of the Indians. For January 29th, he recorded "a fine warm Day. we are now burning a large Coal pit, to mend the indians hatchets, & make them war axes, the only means by which we precure [sic] Corn from them." Some days, the blacksmiths worked continuously. On March 13th, Clark wrote, "Many [sic] Ind<sup>s</sup> Indians here to day . . . the Smiths have not an hour of Idle time to Spear [sic] ." On other occasions respected leaders of the several villages visited the fort. As Clark explained in his entry for February 25th:

. . . We were visited by the Black mockerson Chief of the little Village of the Big Bellies,<sup>8</sup> the Chief of the Shoe Ind<sup>s</sup> [Indians]<sup>9</sup> and a number of others those Chiefs gave us Some meat which they packed on their wives, and one requested a ax to be made for his Sun [sic]. . .<sup>10</sup>

When spring arrived, the party resumed their exploration of the Missouri. As they traversed the often treacherous river, both Lewis and Clark noticed that the bluffs along the river contained lignite. Approximately fifteen miles above the mouth of Snake Creek, Clark wrote:

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<sup>7</sup>Quaife, Journals of Lewis and Ordway, pp. 179, 185.

<sup>8</sup>"Big Bellies" refers to the Hidatsa Indians. Lewis and Clark named them such because they were selfish people. See Robinson, "Lewis and Clark," p. 10.

<sup>9</sup>"Shoe" refers to a band of the Hidatsa Indians. See Russell Reid, ed., Lewis and Clark in North Dakota (Bismarck: State Historical Society of North Dakota, 1947), p. 34.

<sup>10</sup>Thwaites, Original Journals, pp. 252, 266, 272.

. . . I saw flowers in the praries [sic] to day, juniper grows on the Sides of the hills & runs on the ground all the hills have more or less indefferent [sic] coal in stratatas at different hites [sic] from the waters edge to 80 feet. those stratias [sic] from 1 inch to 5 feet thick. . . 11

Lewis observed lignite near the mouth of the White Earth River in southwestern Mountrail County. He wrote

. . . I met with several stones today that had the appearance of wood first carbonated and then petrefed [sic] by the water of the river. . . I believe it to be the Stratatas of Coal seen in those hills which causes the fire and birnt [sic] appearances frequently met with in this quarter.<sup>12</sup>

The "captains of discovery" also tested the lignite. When the expedition reached Elbowoods on the site of the present day Fort Berthold Indian Reservation, Clark fired some of the woody textured substance and was not pleased with the results. The coal appeared to be an excellent fuel, but when fired it resisted and did not emit a sufficient flame. Lewis, on the other hand, received positive results when he experimented with lignite near Painted Woods Creek. He recorded his results in his journal.

. . . The coal appears to be of better quality; I exposed a Specimen of it to the fire and found that it birnt [sic] tolerably well, it afforded but little flame or smoke, but produced a hot and lasting fire.<sup>13</sup>

Approximately fifty years after Lewis and Clark explored the Missouri, steamboats began navigation of the Big Muddy as far up as Fort Benton in the Montana Territory. In previous years, the steamboats had failed to navigate the section of the river from Fort Union to Fort Benton because of inexperienced pilots and the deceptions of the river itself. During this earlier

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<sup>11</sup>Ibid., p. 291.

<sup>12</sup>Thwaites, Original Journals, p. 315.

<sup>13</sup>Ibid., pp. 296, 329.

period, steamers furnished transportation to the various fur trading companies, the only established population at that time. By the 1860's, however, the arrival of the military and the westward expansion of settlers and miners created a much larger demand for the services of these steam-powered vessels.<sup>14</sup>

Lignite coal was not a conventional source of power for the steamboats that plied the Missouri River during the 1860's.<sup>15</sup> Yet, like their frontier counterparts Lewis and Clark, the steamer captains also recognized the brown coal and experimented with it. Also, the scarcity of wood along the "Big Muddy" presented a serious fuel problem for the steamboat captains. When the availability of fuel was no problem, the captains often acquired wood that refused to burn well.<sup>16</sup> For example, Joseph LaBarge,<sup>17</sup> a pilot

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<sup>14</sup>William Lass, History of Steamboating on the Upper Missouri, (Lincoln: University of Nebraska Press, 1962), pp. 8, 21.

<sup>15</sup>Harold E. Briggs, "Pioneer River Transportation in Dakota," North Dakota Historical Quarterly 3(April 1929): 166.

<sup>16</sup>Fuel was often a difficult problem for the steamboat captains. Little wood along the river burned well. On many occasions they were forced to use driftwood that had piled up on the sandbars in the river. When there was no driftwood, they had to rely on green cottonwood which did not produce sufficient power. With this difficulty, the captains turned to lignite. More often than not, however, the lignite they used proved to be more unsuccessful than the cottonwood. The boilers in the steamboats were not adapted to burning lignite, and therefore they settled for the green cottonwood. The type of fuel that they preferred was a hard wood, such as cedar, but it was too far from the river bank for the crew to cut and haul back to the boat. For more information, see Joseph M. Hanson, The Conquest of the Missouri: Being the Story of the Life & Times of Grant Marsh, (Chicago: A. C. McClurg and Company, 1916), pp. 115, 116, 200; Ralph E. Nichol, "Steamboat Navigation on the Missouri River With Special Reference to Yankton and Vicinity," South Dakota Historical Collections, 26 (1952): 193-195.

<sup>17</sup>Joseph LaBarge navigated many steamboats on the Missouri River for several years. For more information see Hiram M. Chittenden, A History of Early Steamboat Navigation on the Missouri River: Life and Adventures of Joseph LaBarge, (Minneapolis, Minnesota: Ross and Haines, Inc., 1962).

on the steamboat Omega, complained in his journal:

. . . Passed Cannon Ball river. . . Bouis' wintering house, where we fill the boat with worthless wood, which makes me curse all the rest of the day. It is only by the aid of rosin that we can raise barely enough steam to keep us moving very slowly.<sup>18</sup>

Carrol J. Atkins,<sup>19</sup> a longtime pilot of the river often noted in his log books the lignite that bordered the banks of the river. As the steamer Ida Fulton ascended the "Big Muddy." Atkins noted in his log on June 30, 1867, that he "wooded at 5 a.m. in the left hand bend, eight miles above Fort Union, just above is a fine vein of coal." On the return trip, Atkins again noticed the lignite. "Departed at daylight, passed Little Missouri 5 a.m. Landed at Berthold. . . any amount of coal below Little Mo. [Missouri] on the same side and below Berthold also." While aboard the steamer Scarred Wolf, also known as Bertha, Atkins made a reference in his log to a specific vein of lignite located south of Bismarck. The captain referred to it as "Coal Bank No. 1."<sup>20</sup>

Major C. W. Howell, from the Office of Western River Improvements, commanded an exploration party up the Missouri in 1867 on the steamboat Miner and recorded the coal that he discovered. On July 28 he wrote:

. . . made a good run and lay up for the night above Square Buttes, 20 miles below Fort Stevenson. Noticed coal at one point cropping

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<sup>18</sup>Hiram M. Chittenden, The American Fur Trade of the Far West, 3 vols. (New York: Francis P. Harper, 1902), vol. 3, p. 997.

<sup>19</sup>Carrol Jones Atkins spent several years on the Missouri River as a pilot. For more information see Orin G. Libby, ed., "Sketch of Captain C. J. Atkins," Collections of the State Historical Society of North Dakota, 2(1908): 263-266.

<sup>20</sup>Orin G. Libby, ed., "C. J. Atkins' Logs of the Missouri River Steamboat Trips, 1863-1868," Collections of the State Historical Society of North Dakota, 2(1908): 334-351.

out of the bluffs at the water's edge, but not in any quantity. Did not have time to examine it.<sup>21</sup>

The riverboat captains also analyzed the lignite. Major Howell tested the coal and concluded that it contained adverse qualities. While the steamboat Miner laid over at Fort Berthold, Howell explored the area and:

. . . found coal outcroppings a few yards above the landing, and secured several specimens; it is a coarsely laminated lignite of a dark brown color, breaking into small fragments with irregular dull fracture when exposed to the air for any length of time, burning with a heavy yellow flame and smoke, and not possessed of great heating or illuminating power . . . .<sup>22</sup>

Captain Grant Marsh,<sup>23</sup> master and pilot of the steamer Josephine tested lignite several times within the laundry stoves of the vessel. Marsh attempted to:

. . . keep up steam in the boilers with it over night . . . had some of it thoroughly dried and, piling seasoned wood around and under it in the furnaces, subjected it to the greatest heat that could be produced. But to no avail. Like iron, it would redden around the edges, but it would not burn, and after each experiment it had to be pulled from the furnaces and thrown in the river.<sup>24</sup>

Although Marsh and Howell obtained objectionable results from their testings, riverboat captains utilized lignite on many different occasions throughout the 1860's. In the log book of the W. J. Lewis for May 15, 1869, Atkins stated that he "saw three black tailed deer. Wooded and got some coal 12m. [miles] in first bluff above Strawberry Island."<sup>25</sup> In 1867, Atkins

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<sup>21</sup>U. S., Congress, House, Report of the Secretary of War, H. Doc. 1368, 40th Cong., 3rd sess., 1867, pp. 604, 640, 647.

<sup>22</sup>Ibid., 641.

<sup>23</sup>Grant Marsh was famous for his heroic rescue of Major Reno's men after the Battle of the Little Big Horn. For more information see Hanson, Conquest of the Missouri, pp. 224-228.

<sup>24</sup>Hanson, Conquest of the Missouri, p. 200.

<sup>25</sup>Sources consulted do not indicate the location of Strawberry Island. A calculated guess would place it twenty miles north of Bismarck, North Dakota.

filled the boilers of the Ida Fulton with lignite on three occasions. On June 23, as the steamer entered the future state of North Dakota, Atkins remarked in his log that they had secured a supply of coal and regretted that they had not taken on more. Two days later, they docked ". . . in the first left hand bend above Strawberry Island . . . took about 600 bushels of coal. It burns very well, makes no smoke and leaves no clinkers." As the Ida Fulton descended the river, they took on 300 or 400 bushels of coal near Fort Buford.<sup>26</sup>

During the 1870's, steamboats increased their consumption of lignite. By the end of the decade, however, they had returned to wood, their standard source of power. The Bismarck Tribune reported on August 12th, 1874 that the "steamer Union is now run wholly with coal from the Lincoln mine. The mine is opposite Bismarck, directly under Fort Lincoln, the vein measuring three feet, the coal good." In July of 1877, Captain Marsh transported an army exploration party under the command of General William T. Sherman up the Missouri on the steamboat Rosebud. He stocked a supply of lignite in case the wood failed to burn well.<sup>27</sup>

Also, in 1877, the Yellowstone Transportation Company purchased a vast amount of lignite for use in steamers on the Yellowstone River, because of a lack of wood along that waterway and because the company believed lignite to be more economical than wood. Throughout 1878, lignite

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<sup>26</sup>Libby, "C. J. Atkins' Logs," pp. 323, 332, 338.

<sup>27</sup>"Bismarck and Vicinity," Bismarck Tribune, 12 August, 1874, p. 4: "The River," Bismarck Tribune, 9 July, 1877, p. 1.

powered several other vessels. Nevertheless, the abundant cottonwood remained the standard fuel.<sup>28</sup>

While the steamboats plied the waters of the Missouri, the United States Government constructed four strategically positioned military posts along that section of the Missouri within the present boundaries of North Dakota: Forts Rice, Buford, Stevenson and Abraham Lincoln. Fort Rice was established in 1864 near the mouth of the Cannonball River because of the increased hostility of the Sioux Indians, the suspicion of the native fur traders as Confederate sympathizers, and the demand for protection from those migrating west to the Montana gold fields.<sup>29</sup>

Fort Buford was constructed in 1866 at the confluence of the Yellowstone and Missouri Rivers and became the second Missouri River stronghold.<sup>30</sup> Shortly thereafter, Fort Stevenson was built and served as a protection for the friendly Indians at nearby Fort Berthold, as a base of supplies for the construction of another post near Devils Lake (Fort Totten), and also as a half-way point between Forts Buford and Rice.<sup>31</sup> Fort Lincoln, built in 1872 south of present day Bismarck, served as a safeguard for the survey

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<sup>28</sup>Thomas J. Myhra, "The Economic Influence of Steamboats on Early Bismarck," North Dakota History 28(April 1961): 75.

<sup>29</sup>Letter of Brigadier-General Alfred Sully to the Assistant Adjutant General of the Northwest in Daniel S. Lamont, ed., War of the Rebellion: A Compilation of the Official REcords of the Union and Confederate Armies (Washington, D.C.: Government Printing Office, 1893), series 1, vol. 41, part 2, pp. 80-81.

<sup>30</sup>Levi N. Larsen, "Some Chapters in the History of Fort Buford," (M.A. thesis, Montana State University, 1942), p. 10.

<sup>31</sup>U.S., Department of War, Surgeon General's Office, Report on Barracks and Hospitals With Descriptions of Military Posts, Cir. No. 4, 870, pp. 395-95. For more information on the history of Fort Stevenson see Ray H. Mattison, "Old Fort Stevenson," North Dakota History, 13 (October 1946): 176-221.

teams and engineering parties of the Northern Pacific Railroad.<sup>32</sup> Thus, by 1872, the U. S. Army of the Department of Dakota controlled the Upper Missouri country.

Although the inhabitants of Fort Lincoln knew of the existence of lignite near the post, cottonwood remained as the principle source of heat. This fuel, frequently green, was used simply because the post lacked stoves adapted for burning lignite. As Lieutenant H.O.S. Helstrand stated in his report to the Chief Engineer Officer of the Department of Dakota: "there is a vein of lignite coal about one mile distant from the post, which it is thought would furnish a good quality of fuel, provided suitable stoves for its use were furnished."<sup>33</sup>

Fort Buford's experience with lignite, like that of Fort Lincoln, was rather limited. Yet, when the post surgeon, Dr. James P. Kimball<sup>34</sup> submitted a detailed description of the post to the Surgeon General's office, he included a section on the "Geology of the Fort and Vicinity." In that segment of the report, the soldier-doctor described the lignite within the fort's reservation and referred to its inherent value. He stated:

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<sup>32</sup>U.S., Congress, House, Miscellaneous Reports, H. Doc. 1558, 42nd Cong., 3rd sess., 1872, pp. 146, 199. For more information on the history of Fort Lincoln see Arnold O. Goplen, "Fort Abraham Lincoln, A Typical Military Post," North Dakota History, 13(October 1946): 176-221.

<sup>33</sup>"Report of Lieutenant H.S.O. Helstrand to Lieutenant John Biddle," Engineer Corps., Chief Engineer Officer, Department of Dakota, p. 2, in U.S., National Archives and Records Service, Returns from U.S. Military Posts, 1800-1916, "Fort Abraham Lincoln," (Washington, D.C.: General Services Administration, GSA 617, 1965), reel no. 628, p. 2.

<sup>34</sup>Dr. James Peleg Kimball served at Fort Buford from 1867-1870. For more information see Maria Brace Kimball, A Soldier-Doctor of Our Army: James P. Kimball, (New York: Houghton Mifflin Co., 1917).



Near the bases of these 'buttes' there not infrequently crops out a seam of lignite averaging from four or five inches to as many feet in thickness. It is of fair quality for fuel and the indications are that the deposit is sufficiently extensive to render it of great value for local use, should the population of the country ever be sufficient to require it.<sup>35</sup>

At Fort Rice, the inhabitants experimented with lignite. The post surgeon, Dr. Washington Matthews,<sup>36</sup> explored a bed of coal near the fort. In his subsequent report to the Surgeon General's Office for the month of June, 1869, the doctor wrote:

. . . went to-day to visit a reported 'coal-bed.' Lt. Reedy took two wagons and some men along. We found a vein of lignite in a gully which runs southward from 'Palace Butte' about four miles from the post. It consisted of wood partially carbonized; the original structure of the individual pieces being easily discernable. The vein was two or three feet thick, 'shading off' into the mud above & below. one wagon load was brought into the fort.<sup>37</sup>

Approximately two years later, Linda Slaughter, wife of the succeeding post surgeon at Fort Rice, Benjamin F. Slaughter,<sup>38</sup> recorded in her diary another investigation of the outlying coal beds. On July 26, 1871, she wrote:

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<sup>35</sup>U.S., Records of the Adjutant General's Office, Medical Histories of Forts in Dakota Territory, "Fort Buford," (Washington, D.C.: General Services Administration, GSA NNM 073-52, 1972), reel no. 1, vol. 198, p. 22.

<sup>36</sup>Dr. Washington Matthews served at Fort Rice from August 1868 to October 1869 and at Fort Stevenson from July 1867 to June 1868 and from October 1869 to August 1870. For more information see Ray H. Mattison, "The Diary of Surgeon Washington Matthews, Fort Rice, D.T.," North Dakota History, 21(January 1954): 5-74.

<sup>37</sup>U.S., Records of the Adjutant General's Office, Medical Histories of Forts in Dakota Territory, "Fort Rice," (Washington, D.C.: General Services Administration, GSA NNM 073-52, 1972), reel no. 2, vol. 247, p. 127.

<sup>38</sup>Dr. Benjamin Franklin Slaughter served at Fort Rice from 1869 to 1872. For more information see Orin G. Libby, ed., "Biographical Sketch of Benjamin F. Slaughter," North Dakota Historical Quarterly, 1(January 1927): 34-35.

Went horseback riding with Lt.'s Greene, Troxel and Potter; visited a gulch three miles west by north from the fort, where we discovered outcroppings of what appeared to be coal. Bringing home some samples, it was found to burn freely. Think this vein could be worked to advantage, barring, of course, the hostile Indians.<sup>39</sup>

On the following day the Quartermaster ordered a detachment of soldiers to secure a wagon loan of the brown colored material. Mrs. Slaughter stated in her diary that it was then "distributed among the officers' families to experiment with," and the brown coal proved to be "superior certainly, to the green cottonwood."<sup>40</sup>

Fort Stevenson was the only one of the four Missouri River posts that used lignite quite regularly. The first winter at Fort Stevenson (1867-68) was an unduly harsh one for the many soldiers and officers who were forced to live in canvas tents because adequate housing was not yet completed. Colonel Philippe Regis de Keredern de Trobriand,<sup>41</sup> who took command of Fort Stevenson the preceding summer, compiled a very interesting and illuminating journal of his experiences at the outpost.

In November of that first winter, before the dire cold had set in, an enthusiastic Trobriand wrote a long account of the lignite on the fort's reservation and praised its inherent qualities and its proximity to the post.

A mile and a half from camp we have a rich coal mine which is easily accessible. Literally, it is only a matter of stooping

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<sup>39</sup>Mrs. Dave Robinson, Secretary, North Dakota Historical Society, Inc., Coleharbor, North Dakota, personal communication, November 15, 1976.

<sup>40</sup>Ibid.

<sup>41</sup>Colonel Philippe de Trobriand commanded Fort Stevenson from August 1867 to May 1869. For more information see Lucile M. Kane, Military Life in Dakota: The Journal of Philippe Regis de Trobriand, St. Paul, Minnesota: Alvord Memorial Commission, 1951).

down to gather it up, the top beds being even with the ground on the slope of the ravine. This coal, which is extracted in hunks with a pick, is of excellent quality and very pure. It burns easily, and is all consumed into cinders. It is providentially fortunate for us and is used in all our stoves. The fuel is ten times easier to get this way than if we had to send out people to cut green wood or to gather dead wood on the sand bars four or five miles from here or on the other side of the river. Economy of time, workmen, and steadier and longer lasting fires. This is what we gain by it. Such a coal mine in the states would be an enormous fortune for the lucky owner or owners. Here, it belongs to everyone, and since it is located on the reserve of the fort, the garrison takes possession of it, and exploits it for its own use without a cent of cost to the government for which, on the contrary, it is a saving of a considerable sum.<sup>42</sup>

As winter progressed, the conditions at the garrison grew worse and uncertainty replaced Trobriand's enthusiasm. On December 16th, the colonel sent out a detachment to secure firewood. The wood-party returned to the post with little fuel and "three men with frozen noses or ears." Trobriand resorted to the brown coal. He related the event in his journal:

Fortunately, we have some coal to help us out until tomorrow. But remember that since the mines were discovered after the establishment of the fort, our stoves are not made for coal, and we can burn it only with an equal quantity of wood. So, if we have no wood. . . Let us hope, however, that after two days and three nights of snow and storm, the weather will calm down again tomorrow and will permit us to keep our fires burning under our canvas roofs in this freezing cold.<sup>43</sup>

In the early part of January 1868, firewood again became a serious problem. As usual, a wood-party proceeded to the banks of the frozen Missouri. They then attempted to open a road for the sleds and wagons across the river to the opposite bank where twenty to thirty cords of cut wood waited for transport. The venture, however, failed because

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<sup>42</sup>Kane, Military Life in Dakota, p. 159.

<sup>43</sup>Ibid., pp. 189-90.

of their inability to open such a road. The party returned to the garrison with no firewood.<sup>44</sup>

By this time, the officers and soldiers had burned up everything that demonstrated combustibility, except for some lumber reserved for the construction of the fort itself.

Trobriand viewed the situation as considerably distressing when he stated that "if the weather does not clear up by tomorrow we face the threat of having to sacrifice some lumber all cut for the construction of one of the officer's houses."<sup>45</sup>

Although he thought about his officer's unpleasant situation, Trobriand himself remained quite warm due to a load of lignite. The Colonel recorded the event in his journal:

As for me, thanks to the indefatigable Dupont,<sup>46</sup> I have no difficulty in keeping up my fire, and one of the carters of the quartermaster was able to bring us a load of coal on a sled, at the price of a frozen ear and nose. But that does not prevent me from thinking of the others, especially when I see my officers, axe in hand, pegging away at some logs they have succeeded in dragging out of the snow.<sup>47</sup>

During the next few years, Fort Stevenson increased its consumption of lignite. In 1870 the two company barracks were heated by three lignite coal fires.<sup>48</sup> The officer's quarters, numbering four buildings, were also warmed by lignite coal. The hospital maintained heat through

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<sup>44</sup>Kane, Military Life in Dakota, p. 215.

<sup>45</sup>Ibid.

<sup>46</sup>Dupont was Trobriand's French servant. For more information on him see Kane, Military Life in Dakota, pp. 213, 215.

<sup>47</sup>Kane, Military Life in Dakota, p. 215.

<sup>48</sup>U.S., Department of War, Report on Barracks and Hospitals, p. 398.

the use of three coal stoves and three wood stoves. The coal stoves provided heat in the main ward, the dispensary and the washroom, while the wood stoves warmed the dining room and the steward's quarters.<sup>49</sup>

With the increased use of lignite, the garrison built several coal sheds. In 1868-69, several sheds were constructed along the south wall of the corral, and near a bluff south of the fort.<sup>50</sup> Three of the coal sheds were rather large, and measured 120 feet long by 15 feet wide by 8 feet high.<sup>51</sup>

Fort Stevenson also contracted for much of the brown coal and hired civilians to maintain the fires. In October of 1870, the post purchased lignite from T. S. Wilder and Company, citizen contractors, at six dollars per ton.<sup>52</sup> In December, 1871, the Quartermaster ordered a shipment of lignite from W. H. White, another coal contractor.<sup>53</sup> In the fall of 1872, the garrison contracted for 488 tons of lignite at seven dollars per ton from still another contractor.<sup>54</sup>

Distribution of the coal and supervision of the heating system was assigned to the "coal burner," a civilian laborer. The Quartermaster's

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<sup>49</sup>U.S., Records of the Adjutant General's Office, Medical Histories of Forts in Dakota Territory, "Fort Stevenson," (Washington, D.C.: General Services Administration, GSA NNM 073-52, 1972), reel no. 3, vol. 312, pp. 11-14, hereafter referred to as Medical Histories, "Fort Stevenson."

<sup>50</sup>Medical Histories, "Fort Stevenson," pp. 17-18.

<sup>51</sup>Mattison, "Old Fort Stevenson," p. 82.

<sup>52</sup>Medical Histories, "Fort Stevenson," p. 191.

<sup>53</sup>U.S., National Archives and Records Service, Returns from U. S. Military Posts, 1800-1916, "Fort Stevenson," (Washington, D.C.: General Services Administration, GSA 617, 1965), reel no. 1227, December 1871, hereafter referred to as Post Returns, "Fort Stevenson."

<sup>54</sup>Medical Histories, "Fort Stevenson," p. 285.

Department employed one coal burner from February to April of 1869 at a salary of sixty-five dollars a month. During the winter of 1870, the post hired another coal burner. He received wages of ninety dollars per month; a substantial increase over the preceding winter.<sup>55</sup>

Throughout the years 1803 to 1875, lignite coal was an object of analysis as well as a source of heat. Within this frontier period, lignite was noticed and written down in journals under the heading of mineralogy or in steamboat log books as points of reference. It was a substance tested by explorers and soldier-doctors who found its qualities to be either promising or discouraging. Lignite was also a power source utilized by the blacksmiths in the forges at Fort Mandan and hauled to the stoves by the "coal burners" at Fort Stevenson. More importantly, these people considered the latent value of lignite and suggested that as the population of the territory increased so would the consumption of lignite. Their conjecture was correct, for in the succeeding years the woody textured material became, for many people, a brown colored gold.

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<sup>55</sup>Post Returns, "Fort Stevenson," February-April 1869, October, 1870.

## CHAPTER II

### THE FLEDGELING INDUSTRY 1873-1900

#### Freight Rates, Misadventures and Educated Men of Political Prominence

In the spring of 1901 the editor of a widely-read North Dakota magazine frankly declared to the people of the youthful state that vast fields of lignite coal were ". . . stored up under the clay and loam of the North Dakota soil . . ." and with great confidence he proclaimed that ". . . it would be no exaggeration to say that there is enough of it to warm the entire population of the United States for ten thousand years."<sup>1</sup> Although quite optimistic, the statement by Colonel Clement A. Lounsberry<sup>2</sup> was indicative of the exuberant attitude expressed by coal mine operators, literary men and state boosters. The infant industry had come a long way since the first pragmatic efforts in 1873. With each fourteen foot vein discovered, with every coal mine opened, and with each sample of the brown

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<sup>1</sup>Clement A. Lounsberry, "Lignite Coal," The Record (June 1901): 40.

<sup>2</sup>Col. Clement A. Lounsberry was the editor of The Record, a publication of the North Dakota Historical Society at Fargo, North Dakota. Lounsberry was also known for his service during the Civil War where he rose to the rank of colonel at the age of twenty-two. He was also the editor of the Fargo Argus, and served on the staff of the Chicago Times and numerous St. Paul and Minneapolis, Minnesota dailies. The Colonel was also a correspondent for the New York Herald and provided that newspaper with a fourteen column report on the Custer Massacre. See Compendium of History and Biography of North Dakota, (Chicago: George A. Ogle and Company, 1900), pp. 1332-1336.

coal chemically analyzed, many people reached the conclusion that one day lignite would make the northern prairie state famous. This sentiment prevailed long before the editor's unreserved comment in early 1901, and it was based in part on events during the 1873-1900 period.

The lignite coal industry had, as its point of origin, the land grant issued to the Northern Pacific Railroad by the United States Congress passed an act authorizing the Northern Pacific Railroad Company to construct a continuous railroad from Lake Superior to Puget's Sound. The 38th Congress also granted to the company immense portions of the public domain in order to aid the construction of the railroad.<sup>3</sup> The total area of this land grant exceeded 39,000,000 acres,<sup>4</sup> of which 10,700,289 acres were located in the Dakota Territory.<sup>5</sup> Specifically, the land grant entitled the railroad to alternate sections of land for forty miles on each side of the tracks within the territories, and alternate sections for twenty miles on each side whenever it passed through a state. In the event that lands granted to the railroad were already occupied, the railway had the right to select additional lands referred to as lien lands. This often increased the grant to fifty miles on each side of the track within the territories. The Northern Pacific used its right to lien lands in the Dakota Territory.<sup>6</sup>

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<sup>3</sup>U.S., Statutes at Large, vol. 13, pt. 1, (December 1863-December 1865), "Lands to Aid in the Construction of a Railroad and Telegraph Line," 2 July 1864, p. 367.

<sup>4</sup>Theodore Schwinden, "The Northern Pacific Land Grants in Congress," (M.A. thesis, Montana State University, 1950), p. 121.

<sup>5</sup>Alva H. Benton, "Large Land Holdings in North Dakota," Journal of Land and Public Utility Economics, 1(October 1925): 406.

<sup>6</sup>Lewis F. Crawford, History of North Dakota, (New York: American Historical Society, Inc., 1931), vol. 1, pp. 264-265.



Section three of the Charter contained another stipulation relative to the grant. Congress specified that all mineral lands were to be excluded from the appropriation and in return the road would receive unoccupied and unappropriated lands. This reservation on minerals, however, did not include coal lands, for Congress provided further ". . . that the word 'mineral' . . . shall not be held to include iron or coal . . ." <sup>7</sup> Therefore, much of North Dakota's lignite came under the control of the Northern Pacific Railroad.

Between the years 1872 and 1881 the Northern Pacific laid its tracks across the northern part of the Dakota Territory. The railroad reached Fargo in 1872 and on June 5, 1873 the iron rails touched the banks of the Missouri River. In September of that year a financial "panic" swept the country and the Northern Pacific Railroad along with numerous other expanding enterprises failed. <sup>8</sup> Construction of the road was halted until the summer of 1879. During that summer, the company completed its track to a point fifty miles west of Mandan. In the following year the Northern Pacific laid its rails through the Badlands, and it finished construction of the road across the state in 1881. <sup>9</sup>

Two other prominent railroads entered the northwestern part of the territory before the turn of the century. What came to be known as the Great Northern Railway Company, under the administration of James J. Hill, constructed a line west from Grand Forks and reached Minot in 1887. In the following year the railway continued construction westward, passed through Williston and shortly thereafter completed the line to the

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<sup>7</sup>U.S., Statutes at Large, vol. 13, pp. 367-68.

<sup>8</sup>Clement A. Lounsberry, History of North Dakota, (Chicago: S. J. Clarke, 1917), vol. 1, p. 333.

<sup>9</sup>Crawford, History of North Dakota, vol. 1, p. 269.

present-day Montana-North Dakota border.<sup>10</sup> The third railroad to furnish transportation in western North Dakota before 1900 was the Minneapolis, St. Paul and Sault Ste. Marie, popularly known as the "Soo" Line. This railroad began construction in the extreme southeastern part of the state in 1891 and built diagonally across North Dakota to Portal, a small town in the northwestern sector of the state, by 1893. Unlike the Northern Pacific, the Soo and the Great Northern Railways lacked land grants, coal resources, and other types of financial assistance, but provided rail facilities to ship the coal.<sup>11</sup>

As the railroads penetrated the western part of the state, their foremost objective was to promote the area and to secure settlement. This was of paramount importance to the Northern Pacific Railroad because of its vast land holdings. Consequently, that railroad published hundreds of articles, pamphlets, brochures and books describing the exceptional aspects of North Dakota, including its rich soil, moderate climate, and also its extensive deposits of lignite coal. For example, in a picturesque book entitled The Great Northwest, An Official Guide to the Northern Pacific Railroad, 1890-91, the industrious corporation described the geological formations in western North Dakota and spoke of the "vast beds of lignite coal which abundantly meet the need of the country for fuel."<sup>12</sup>

In another piece of booster literature, the railway reported on the James River Valley country for ". . . those seeking New Homes and

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<sup>10</sup>Ibid., pp. 256, 271, 272.

<sup>11</sup>Lounsberry, History of North Dakota, vol. 1, pp. 335-336; Crawford, History of North Dakota, vol. 1, p. 256.

<sup>12</sup>The Great Northwest, An Official Guide to the Northern Pacific Railroad, 1890-91, (St. Paul: W. C. Riley, 1890), p. 173.

Profitable Investments." Besides information on the crop reports for 1882 and a list of instructions for proper settlement, the pamphlet covered the subject of fuel.

As there are no large bodies of timber in Dakota, and no beds of the anthracite and bituminous coal found in the East, it is supposed by many that this country is entirely destitute of fuel, and that its only means of supply is by purchasing in the East at the most exorbitant rates. This is an error. Beds of LIGNITE coal are found in this locality in almost inexhaustible quantities. This coal is entirely free from sulfur, stone and other foreign elements. It burns up as clean as wood, without waste, and without clinkers or cinders.<sup>13</sup>

Promotional activities of this nature were not launched solely by the railroads. The territorial government was also instrumental in attracting settlers to this "land of milk and honey." Like the Northern Pacific Railroad, both the Territorial Department of Immigration and Statistics and the Department of Agriculture and Labor published detailed descriptions of North Dakota and cited lignite as one of its major "resources and advantages."

In 1887, the Commissioner of Immigration, P. F. McClure, compiled a highly technical book on the Resources of Dakota and devoted several pages to lignite and its chemical composition. He also declared that the brown coal held certain advantages for the prospective homesteader. He stated that:

This lignite, or brown coal, is of soft variety, excellent for heating purposes, and . . . superior to almost any coal discovered on the continent . . . lignite burns readily and furnishes the settlers of a prairie country with that inestimable boon, cheap domestic fuel.<sup>14</sup>

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<sup>13</sup>The Upper James River Valley of North Dakota, Information to Those Seeking New Homes and Profitable Investments, (Jamestown, D.T.: Jamestown Board of Trade, 1883), pp. 7-9, 14; Another good example of this type of literature is Western North Dakota: Being a Description of a Land of Great Promise and the Opportunities it Holds for Homeseekers, (published by the Northern Pacific Railway, 1910).

<sup>14</sup>P.F. McClure, Resources of Dakota, An Official Publication Compiled by the Commissioner of Immigration, (Sioux Falls, Dakota: Argus-Leader Company Printers, 1887), pp. 159-160.

The Commissioner of Agriculture and Labor published various materials on North Dakota and its native resource. In 1892, Commissioner H. T. Helgesen issued a pamphlet about this "land of prolific products and prosperous people." Under the section "Coal and Other Mineral Deposits," Helgesen pointed out that:

The Mineral resources of the State are as yet but slightly developed, but enough is known to indicate that they will be of no mean importance in the future history of the Northwest. . . One of the chief sources of mineral wealth is the coal, which exists in great abundance. . . The quality of the coal is an excellent lignite, almost free from the bitumen which gives the offensive smoke and odor incident to burning most soft coals, and unusually free from sulphur.<sup>15</sup>

The newspapers also played an influential role in the settlement of western North Dakota. They, like the railroads and state commissioners, extolled the advantages of lignite coal. In the March 24, 1884 edition of the Bismarck Tribune, an article, brimming with colorful adjectives, spoke of the future state and specifically of McLean County as that "heaven-favored territory." The article not only included several paragraphs praising "No. 1 hard" wheat, but also counted lignite among one of its endless assets.

The inexhaustible beds of lignite coal, which underlies so much of this locality, are of untold value to the settler. It makes excellent fuel, and can be supplied at a remarkably low cost. This coal is being largely used in lieu of wood, and for both heating and cooking purposes it meets every requirement. . . These immense deposits of lignite stretch far away on every side, and their value to the country can never be estimated.<sup>16</sup>

The Bad Lands Cow Boy, a newspaper published at Medora in Billings County, included an essay in its February 7, 1884 issue entitled "The Badlands, Their Worth to the Stock Man, Miner and Gardener." This

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<sup>15</sup>H. T. Helgesen, North Dakota, A Few Facts Concerning Its Resources and Advantages, (Bismarck: Tribune, State Printers and Binders, 1892), p. 4.

<sup>16</sup>"McLean County," Bismarck Tribune, 24 March 1884, p. 7.

bolstering article suggested that:

To the stock raiser and coal miner . . . this is the king country of the world . . . The coal fields of the Bad Lands contain enough coal to supply the world. It is a superior quality of lignite and crops out directly on the face of raw buttes. We have yet to see one in which there were not from one to five veins of coal in plain view. In the course of time this will be a large source of income.<sup>17</sup>

The literature published and circulated by governmental officials, the railroads, and the newspapers, lured thousands of Americans and Europeans to this northern prairie state, and the resulting influx was known as the "Great Dakota Boom." People emigrated from the British Isles, Germany, Russia, Norway and from a host of other European countries. Many immigrants came individually, while others joined large colonization groups. Several villages and towns in western North Dakota, such as New Salem, Glen Ullin, Richardton, Gladstone and Dickinson, were the result of these colonization projects.<sup>18</sup> By 1900, the population of western North Dakota, including the counties of Ward, Williams, Billings, Stark, Morton, Oliver, Mercer, McLean, and Burleigh, exceeded 39,000 inhabitants.<sup>19</sup>

Before the "Boom" began, however, the early founders and boosters of the sprawling village of Bismarck began the development of the soft coal, and their ventures into the coal mining business resulted in limited success. In the fall of 1873, Dennis Hannifin, listed in Jewell's

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<sup>17</sup>"The Badlands, Their Worth to the Stock Man, Miner and Gardener," Bad Lands Cow Boy, 7 February 1884, p. 4.

<sup>18</sup>Harold E. Briggs, "The Great Dakota Boom, 1879 to 1886," North Dakota Historical Quarterly, 4(January 1930): 88-89.

<sup>19</sup>U.S., Department of Commerce, Bureau of the Census, Twelfth Census of the United States, 1900: Population, 1: 33-34, 775.

Directory of Bismarck as a gambler and also the squatter governor of the territory, discovered several veins of lignite west of Bismarck near Sims. Hannifin together with another early pioneer and miner, John S. Warn, claimed the veins and organized a "company." The freshman coal miners then traveled westward to their "heavy bed of coal" under military escort provided by Lieutenant Colonel George A. Custer, the commanding officer at Fort Abraham Lincoln.<sup>20</sup>

Upon arrival at the site, the soldiers supplied Hannifin's party with arms and shortly thereafter returned to Fort Lincoln. As soon as the escort left, hostile Sioux Indians attacked the party. Hannifin and Warn, well supplied with arms and provisions, decided to entrench themselves and to defend their possessions. During the ensuing months at "Fort Hannifin . . . more properly the cave in which they were entrenched," the gambling governor and the miner "had several brushes with the Indians." The native Americans finally stopped their offensive assaults, but they returned defiantly the following spring and "drove the squatters off."<sup>21</sup> The mine remained undeveloped until 1882 when the Northern Pacific Coal Company decided to succeed where Hannifin had failed.

In 1875, another group of industrious men tried to mine lignite; they, too, met with misfortune. In that year, one Commodore W. J. Kountz of Allegheny, Pennsylvania, traveled through the western part of the territory looking over the numerous coal beds and soon had in contemplation

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<sup>20</sup>"Lignite Coal," The Record (November 1895): 12; Clement A. Lounsberry, "The Coal Regions of North Dakota," The Record (November 1896): 6; M. H. Jewell, First Annual Directory of Bismarck, D.T., (Bismarck: Tribune Presses, 1879), Edwin J. Taylor, History of the City of Bismarck, North Dakota, 1872-1972, (Bismarck: Bismarck Centennial Association, 1972), p. 23.

<sup>21</sup>Ibid.

the establishment of a barge line on the Missouri for the purpose of shipping the coal east from a vein located on the east bank of the Missouri opposite the mouth of the Knife River. Three other men, W. B. Shaw, J. Sutton Winston and E. T. Winston became involved with the com-  
 modore. They in turn hired an old miner named McCall to extract the coal.<sup>22</sup> The vein began ten feet above the ordinary water stage and extended into the hillside for approximately 200 feet. Miner McCall began digging into the gradient but never finished his task. The promise of wealth hidden in the Black Hills lured McCall into prospecting for the yellow gold. J. Sutton Winston died and the "workings of the mine. . . washed into the river."<sup>23</sup>

Although the two preceding investments in the mining of lignite coal turned into abortive attempts, a substantial number of mines opened throughout the 1880's and 1890's proved to be successful. The enterprising men who opened these mines generally located them near the towns and villages established along the routes of the three railroads that stretched across western Dakota. Such aspiring communities as Dickinson, Leheigh, Sims and Hebron along the tracks of the Northern Pacific became important mining areas. Along the path of the Soo line, Minot, Burlington, Davis, and Kenmare developed their deposits and soon became well known as a large mining region. On the Great Northern line men began excavating the lignite beds within the Williston area. Other coal mining towns before 1900 were Coal Harbor (Coleharbor), Stanton and Washburn along the Missouri River. Many of the mines before the turn of the century were one man operations. Yet, there were other mines that employed as many as 300 men.

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<sup>22</sup>Hartwick, "Lignite Coal," The Record, p. 12; Lounsberry, "The Coal Regions of North Dakota," The Record, p. 6.

<sup>23</sup>Ibid.

One of the first major mining concerns in western North Dakota was the Northern Pacific Coal Company, a corporate division of the Northern Pacific Railroad. The Northern Pacific Coal Company was organized January 23, 1882, under chapter 28 of the General Laws of the state of Minnesota. There was some doubt as to whether the charter of the Northern Pacific Railroad Company allowed investments in the stock of mining companies, so the interest of the railroad in the stock of the coal company was held under the name of a trustee. A. J. Thomas of New York City, the trustee for the railroad company, received 250 shares of one-half of the original \$50,000 capitalization of the company. E. H. Bly of Bismarck received the other 250 shares. Finally, through a series of stock transfers, Thomas acquired the entire holdings. The total cash investment of the railroad in the capital stock of the coal company amounted to \$79,166.66.<sup>24</sup> The officers of the company included T. F. Oakes, president, Colonel W. P. Clough, secretary and attorney, G. G. Sanborn, treasurer, and Charles W. Thompson, General manager.<sup>25</sup>

The Northern Pacific Coal Company operated mines at Sims and Little Missouri<sup>26</sup> in the Dakota Territory. (The company also had mines

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<sup>24</sup>"Report on the Northern Pacific Coal Company," (Northern Pacific Railway Company Papers, Secretary's Branch Line Data File, Archives and Manuscripts Division of the Minnesota Historical Society, 1500 Mississippi Street, St. Paul, Minnesota), p. 1, hereafter referred to as "Report on the Northern Pacific Coal Company."

<sup>25</sup>Andreas' Historical Atlas of Dakota, (Chicago: Lakeside Press, 1884), p. 194.

<sup>26</sup>The operation at Little Missouri was rather short lived. The lignite was unsatisfactory for use in locomotives and therefore it will not be discussed in this chapter. See "Report on the Northern Pacific Coal Company," p. 2.



in Montana and Washington.)<sup>27</sup> On July 5, 1879, Charles W. Thompson opened a mine near the site of Dennis Hannifin's earlier efforts.<sup>28</sup> E. H. Bly apparently owned it, since the railroad purchased the mine from him in December of 1882 for \$20,000. The coal company in turn acquired the mine and 590 acres from the railroad for \$2,950 and reserved certain sections for the incorporation of the Sims townsite.<sup>29</sup> The name of the operation was changed from Bly's Mine to the Baby Mine. The coal was located in five different veins; one was seven feet thick and the other four measured three and one-half to four feet in thickness. In 1884 the average output of the mine was 100 tons daily.<sup>30</sup> The railroad utilized one-half of the lignite and the coal company constructed a fuel yard in Bismarck to supply the locomotives. The remaining amount was either consumed by the local populace or shipped east to patrons in Mandan and Bismarck.<sup>31</sup>

The Northern Pacific Coal Company employed a large number of people at the Baby Mine. Many of the men who extracted the lignite out of the five different veins were immigrants who either lacked sufficient capital for the purchase of farm land or were established homesteaders who worked in the mine during the winter months in order to supplement their income. August Weinreich, who arrived in 1884, worked in the mine at Sims before he homesteaded. In 1885 Thomas Ekwortzell came to the

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<sup>27</sup>See "Report on the Northern Pacific Coal Company," pp. 2-3.

<sup>28</sup>Andreas' Historical Atlas, p. 194.

<sup>29</sup>"Report on the Northern Pacific Coal Company," p. 2.

<sup>30</sup>Andreas' Historical Atlas, p. 194.

<sup>31</sup>"Report on the Northern Pacific Coal Company," p. 2; Hartwick, "Lignite Coal," The Record, p. 12.

thriving coal town and worked in the mine until he too homesteaded a piece of land. Frederick Heager, Sr., another immigrant decided to work for the coal firm in order "to earn enough money to buy oxen, and the needed machinery to work his land."<sup>32</sup>

The Northern Pacific Coal Company continued to extract lignite out of the mine at Sims until 1887. In May of that year the company decided to terminate the operations at the Baby Mine.<sup>33</sup> Hard coal in eastern Montana proved to be a more successful fuel for powering locomotives, and that fact plus paralyzing losses necessitated the closing of the soft lignite mine.<sup>34</sup> Within its five year lifespan, the mine produced a substantial loss for the company. Table 1 below indicates the net results of the mining operation at Sims.

TABLE 1

## NET RESULTS OF THE NORTHERN PACIFIC COAL COMPANY'S BABY MINE

Coal Revenue	Operating Expenses	Depreciation and Property Values Charged Off	Net Revenue
\$166,515.92	\$136,407.90	\$68,489.94	-\$38,381.92

SOURCE: "Report on the Northern Pacific Coal Company," (Northern Pacific Railway Company Papers, Secretary's Branch Line Data File, Archives and Manuscripts Division of the Minnesota Historical Society, 1500 Mississippi Street, St. Paul, Minnesota), p. 3.

<sup>32</sup>History Committee, New Salem Diamond Jubilee Anniversary, 1883-1958, [located in the holdings of the North Dakota Room, Chester Fritz Library, Grand Forks, North Dakota] pp. 83-86, 108-114.

<sup>33</sup>"Report on the Northern Pacific Coal Company," p. 2.

<sup>34</sup>Marion Plath Peterson, ed., Morton Prairie Roots, (Dallas, Texas: Taylor Publishing Company, 1975), p. 15.

In the northern part of the coal region near Minot, mining operations began four years before the arrival of the Great Northern Railroad and ten years before the Soo line penetrated the Mouse River Valley country. On April 30, 1883, Joseph L. Colton, later a delegate to the North Dakota Constitutional Convention,<sup>35</sup> James Johnson, another state politician,<sup>36</sup> and J. J. Rogers arrived at the present site of Burlington where they discovered lignite coal.<sup>37</sup> The following fall, Colton, known affectionately as "Uncle Joe,"<sup>38</sup> opened the first coal mine in Ward County. The vein measured approximately eleven feet in thickness and horizontal shafts ran for 200 to 300 feet from the entrance into the hillside.<sup>39</sup> Colton hauled his lignite into Burlington by wagon and sold it to the local customers at \$1.25 per ton. With the arrival of the Soo Railroad in 1893, Colton expanded his enterprise. He shipped the brown fuel to Minot aboard the railroad cars and sold it at \$2.00 per ton. Colton lignite also found ready markets in the Red River Valley at Grand Forks, where a ton was purchased by consumers for \$4.50.<sup>40</sup> The

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<sup>35</sup>Lounsberry, History of North Dakota, vol. 2, p. 708.

<sup>36</sup>William B. Hennessy, History of North Dakota, (Bismarck, North Dakota: Bismarck Tribune, 1910), p. 341.

<sup>37</sup>Brynhild Haugland, "A History of Ward County," Term Report, 1927, [located in the holdings of the North Dakota Room, Chester Fritz Library, Grand Forks, North Dakota], p. 13.

<sup>38</sup>"Burlington Doings," Ward County Reporter and Minot Journal, 22 February 1895, p. 1.

<sup>39</sup>First Biennial Report of the Geological Survey of North Dakota, 1901, (Grand Forks: Herald, State Printers and Binders, 1901), p. 61.

<sup>40</sup>Clement A. Lounsberry, "The Coal Regions of North Dakota," The Record (November 1896): 6.

coming of the railroad was not a total blessing for Joseph Colton. He had considerable trouble with the Soo Company over their refusal to build a spur or side track from the main road to the entrance of his mine.<sup>41</sup>

Eventually, the Colton Coal Mine changed hands. In April of 1894, K. K. McLeod, a wealthy capitalist from St. Paul and R. H. Golley, an employee of the Soo Railroad in Minot, purchased two-thirds interest in the mine, together with four hundred acres of coal land. Colton retained one-third ownership of the mine. The new firm continued to be known as the Colton Coal Mining Company. Samples of the lignite were tested for several weeks in St. Paul and were found "to meet the highest expectations of those interested." The three proprietors then decided to improve their enterprise. They proposed to enlarge the mine and to hire "a force of competent miners."<sup>42</sup> However grand their expectations and renovations, the Colton Coal Mining Company finally went into collapse before the turn of the century.<sup>43</sup> Still, this first mine in Ward County "was a great mine in its day and a most valuable property."<sup>44</sup>

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<sup>41</sup>Ibid.

<sup>42</sup>"More Capital--More Coal," Minot Journal, 13 April 1894, p. 1.

<sup>43</sup>The Colton Coal Mining Company closed in about 1897. In the fall of 1894, Joseph Colton retired and moved to Florida and died in 1896. Leslie Colton, his son, reopened the mine after 1900, and for over thirty years the younger Colton operated the mine at various intervals and supplied the local market. See "More Capital--More Coal," Minot Journal, p. 1; Lounsberry, History of North Dakota, vol. 2, pp. 708-711; Eighth Annual Report of the Coal Mine Inspection Department, 1926, (Bismarck: n.p., 1926), p. 57.

<sup>44</sup>Clement A. Lounsberry, "North Dakota Coal," The Record (October 1901): 8.

Six miles northwest of Minot, L. M. Davis began excavations into a hillside layered with alternate bands of lignite, sand and clay, and the resulting activity became known as the Mouse River Lignite Coal Company. It became one of the largest mines in operation before 1900. In 1894, Davis, a graduate of the Massachusetts Institute of Technology in civil engineering and the county surveyor of Ward County, established a station and loading platform near the site of the excavations and named it Davis.<sup>45</sup> The Davis Mine was shortly thereafter incorporated into the Mouse River Lignite Coal Company which was owned in part by the officers of the Soo Railroad.<sup>46</sup> Davis remained as the manager of the mine.<sup>47</sup>

The Mouse River Lignite Coal Company's Davis Mine was the first mine in North Dakota to be worked on scientific principles.<sup>48</sup> Earle J. Babcock, the first state geologist, gave an ample description of the mine and its methodical operation in the first biennial report of the Geological Survey.

The coal outcrops along the hillside from 60 to 150 feet below the surface. Tunnels have been run in from the side for a distance of about 2,000 feet. There are two openings with about 50 feet of coal left between them. After striking the coal, the tunnel follows the vein. This has an average dip of about two feet to 100 feet away from the entry . . . the layer of coal used is about 1,540 feet above sea level; it is from 9 to 13 feet thick

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<sup>45</sup>Compendium of North Dakota, p. 1195; Mary Anne Barnes Williams, Origins of North Dakota Place Names, (Bismarck: Bismarck Tribune, 1966), p. 333

<sup>46</sup>Lounsberry, "North Dakota Coal," The Record, p. 8.

<sup>47</sup>"Burlington Doings," Ward County Reporter and Minot Journal, 15 February 1895, p. 1

<sup>48</sup>Lounsberry, "North Dakota Coal," The Record, p. 8.

and almost solid, there being only a very thin layer of clay within this coal body.

This mine is systematically worked and has a large output. Compressed air coal cutters are employed, a fan system provides good ventilation, and the coal is removed by cable cars which run to loading chutes delivering the coal directly into the railway cars.<sup>49</sup>

Within one year of its opening, the Mouse River Lignite Coal Company had become a large producer of the brown coal. For example, on February 15, 1895 "17 cars stood on the sidetrack opposite the Davis Mine--or more properly speaking, the Mouse River Lignite Coal Comapny's mine--every car of which was loaded with coal for eastern points."<sup>50</sup> By 1900 the mine was producing from 500 to 600 tons per day and the company employed a sizable force; anywhere from 60 to 100 miners performed the often arduous task, and they were paid \$.60 for every ton they removed from the plentiful vein.<sup>51</sup> Mouse River coal was shipped via the Soo and Great Northern Railroads to such eastern points as Valley City, Hankinson, Fairmount, Larimore, Grand Forks, Fargo and also as far away as Glenwood, Minnesota.<sup>52</sup>

Along the tracks of the Soo line near Kenmare,<sup>53</sup> the lignite coal industry became a thriving enterprise for many people. One of

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<sup>49</sup>First Biennial Report of the Geological Survey, 1901, p. 59.

<sup>50</sup>"Burlington Doings," Ward County Reporter and Minot Journal, 15 February 1895, p. 1

<sup>51</sup>First Biennial Report of the Geological Survey, 1901, p. 59; "Mouse River Valley Coal Lands," Minot Optic, 23 March 1899, p. 4.

<sup>52</sup>Clement A. Lounsberry, "The Mouse River Lignite Coal Company," The Record (November 1896): 13.

<sup>53</sup>The original name for Kenmare was Lignite. W. Augustine C. Rouse, a coal operator and owner of considerable coal lands, named it Lignite and established a post office there in 1894. See Williams, North Dakota Place Names, p. 335.

the several coal firms established prior to 1900 was the Smith-Kenmare Dry Coal Company. William T. Smith and E. C. Tolley of Kenmare and L. B. Mattoon of Elgin, Iowa owned the enterprise. The company owned 640 acres of land, which reportedly would yield approximately 15,000 tons of lignite per acre. The vein measured six feet and was deemed superior to many other coal beds in the state.<sup>54</sup> Tunnels ran for about one mile and employment ran as high as 300 men. Several samples of the lignite were analyzed by the state geologist, and one sample contained 40.59 percent volatile matter, 53.24 percent fixed carbon and 6.17 percent ash.<sup>55</sup> During the winter of 1900, the mines produced six to ten railroad car loads per day for shipment east and another forty tons for consumption within the local market area.<sup>56</sup>

Another highly successful lignite enterprise was the Lehigh Mine, four miles east of Dickinson. Before 1890, there was little mining in the western edge of the coal region. It was not until John F. Brodie worked for two years in the Lehigh Mine, and realized the vast possibilities for wealth, that real mining was carried on. Brodie, a well educated man, a successful mining engineer and "a valuable member of the Tenth North Dakota legislative session," came to Dickinson in 1892. He soon became interested in the native coal and its production and consumption possibilities. Brodie, together with A. P. Peake of Valley City and Alexander C. McGillivray of Dickinson, a state senator and "tireless worker in the interests of the western part of the state," purchased the

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<sup>54</sup>Lounsberry, "North Dakota Coal," The Record, p. 8.

<sup>55</sup>First Biennial Report of the Geological Survey, 1901, pp. 62-63.

<sup>56</sup>Lounsberry, "North Dakota Coal," The Record, p. 8.

Lehigh Mine and began developing their underground wealth.<sup>57</sup>

The amount of lignite in the Lehigh vein was exceedingly large and the operation was considered by some to be the most comprehensive in the state. Brodie submitted to The Record an article sketching the "Coal Industry" in the state, and he included two descriptive, yet somewhat biased paragraphs on the Lehigh Mine. He stated that:

The most extensive of the mines is located at Lehigh in Stark [C]ounty, where a twenty-six-foot vein is worked and where the operator's claim to have beaten the world's record as to cheapness of the production. This mine is entered by a tunnel running into a high bluff, whose tablelands extend for a distance of twenty miles and contain three and a half billion tons. The level of the bottom of the coal is ten feet higher than the level of the railroad tracks, greatly simplifying the loading on cars.

The mines are worked on the stall and pillar system. An electric apparatus is used in undercutting the coal, which is blasted down with powder and loaded into small cars that run on a narrow gauge track from the mine to the railroad cars. From twenty to ninety men are employed, the larger output being in the winter season.<sup>58</sup>

By 1895, the Lehigh Mine represented an investment of over \$100,000. Many attributed the success of the Lehigh Mine to Brodie because of "his tact, skill and indomitable energy."<sup>59</sup> Yet, the real growth of the Lehigh Mine took place during the expansive years after 1900. Within the first decade of the new century, the officers of the enterprise pooled their managerial skills, engineering abilities, and monetary assets and opened another mine at New Salem and also one at

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<sup>57</sup>Hennessy, History of North Dakota, pp. 142-152.

<sup>58</sup>John F. Brodie, "The Coal Industry," The Record. (July 1899): 15.

<sup>59</sup>Clement A. Lounsberry, "The Lehigh Coal Mines," The Record (November 1895): 8.



Scranton in Bowman County. Together these mines became known as the great Consolidated Coal Company.<sup>60</sup>

Another community that developed its lignite was Washburn in McLean County, and the most famous mine in that area was the Black Diamond Mine. The Black Diamond Mine began on a small scale, and like the Lehigh Mine, it did not reach its peak of production until after 1900. The man who opened this mine was John Satterlund, affectionately crowned "King John" because of his commanding power in the field of politics. Satterlund was a member of the House of Representatives, served as the county commissioner of Burleigh County, and was appointed to various other offices because of his political leadership abilities.<sup>61</sup>

In 1895, Satterlund decided that it was time to develop Washburn's subterranean resources. He located a sizable vein six miles northwest of the flourishing community on the banks of a coulee that drained into the Missouri River. The seam measured approximately nine to ten feet of which seven feet was mined and the remaining portion was reserved for the roof and the floor. A tunnel ran from the side of the bank into the vein for about 175 to 200 feet.<sup>62</sup>

Satterlund's primary purpose in opening the mine was to supply the flour mill in Washburn with a needed fuel. His lignite not only powered the mill but also furnished the townspeople with the desired commodity and it gained wide acceptance. A correspondent from the

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<sup>60</sup>Hennessy, History of North Dakota, p. 152.

<sup>61</sup>Mary Anne Barnes Williams, Pioneer Days of Washburn, North Dakota and Vicinity, Book Two, (Bismarck: Bismarck Printing Company, 1953), p. 3; Lounsberry, History of North Dakota, vol. 3, p. 784.

<sup>62</sup>First Biennial Report of the Geological Survey, 1901, p. 70.

Bismarck Tribune described Satterlund's lignite as "of superior quality, hard and black with very little foreign substance of any kind in it."<sup>63</sup> It was also claimed, in 1901, that the highest carbon content of any lignite bed known at that time was found in "King John's" Mine.<sup>64</sup>

In Mercer County, southwest of McLean, two of the first efforts at lignite mining became exercises in futility. The first man to mine coal in Mercer County was Charles J. Dolan. Before coming to the Knife River Valley in 1882, Dolan spent time in the Black Hills searching for the precious yellow dust. One year after his arrival, he settled near Hazen and shortly thereafter opened a mine on a farm owned by Jacob Reichenberg. He used both the stripping and undermining methods in extracting his lignite. Dolan's mining activity on the Reichenberg farm was rather short-lived, however, for after twelve months in operation, the mine caved in. Perhaps Dolan's mine was bound to collapse because of his employing both methods of extraction. In any event, he was not totally discouraged because in 1885 he opened a new mine on another farm.<sup>65</sup>

The second hopeless adventure in the lignite development in Mercer County was the Plenty Mine. Joseph Plenty, an experienced mine operator from Scranton, Pennsylvania, purchased the "Coal Bluffs" on the Missouri River near Stanton. In 1887 he built what was considered

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<sup>63</sup>Clement A. Lounsberry, "Satterlund's Coal Mine," The Record (February 1896): 29.

<sup>64</sup>Lounsberry, "North Dakota Coal," The Record, p. 8.

<sup>65</sup>C. B. Heinemeyer and Mrs. Ben Janssen, History of Mercer County, North Dakota, 1882 to 1960, (Hazen, North Dakota: Hazen Star, 1960), p. 40.

"the first commercial coal mine in Mercer County." His objective was to load the lignite on barges directly from the bluff that faced the river, and to ship it down stream to Yankton, Sioux City and St. Louis. Apparently Plenty did not take into account the sometimes violent behavior of Mother Nature and the precariousness of the Big Muddy River, for several of his laden vessels soon met disaster.

During a severe storm, one of the barges grounded on a sandbar, one struck a snag and sank; and the other turned turtle. Later he made another attempt, and successfully got one barge load to Bismarck; the profits, however, were so little that he quit the business and returned East.<sup>66</sup>

Many of the mines that were opened were commercial firms, yet a greater percentage were small operations referred to as wagon mines. Some of these wagon mines were worked by five or more men, while others were mere one-man undertakings. The wagon mines were closed during the summer months but offered employment to many throughout the fall and winter seasons. The lignite taken from these mines generally was used for domestic purposes by the farmers and townspeople.<sup>67</sup>

The farmers themselves often homesteaded land that contained sizable seams. Frequently they mined their lignite, hauled it by wagon to the nearest town and sold it". . . as wood [was] sold in the timber countries." Generally it sold at \$2.00 per ton. In some instances, the homesteader simply dug the coal and waited for his surrounding neighbors to come, load the cargo and haul it away themselves. The haul-it-yourself option reduced the cost to \$1.00 per wagon load. There were also situations in which farmers and ranchers built their homes directly over the

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<sup>66</sup>Ibid.

<sup>67</sup>Ibid., p. 44.

coal mine, and merely dug into the walls of their cellars for fuel, thereby, obtaining an unlimited supply at no cost.<sup>68</sup>

The total number of coal mines opened in the state prior to 1900 was significant. The chart on the following page lists a substantial, but not the total number of pre-1900 mines (Table 2). The table also gives an indication of the widespread production of lignite in western North Dakota.

The Methods of mining used both before and after 1900 in North Dakota were of two general types: the room and pillar or underground and the open or strip pit method was employed in extracting lignite from both the shaft and the drift type mines. Both types of mines were essentially the same except for the course of entry.<sup>69</sup> In a shaft mine, a tunnel was drilled in a vertical direction, either penetrating through the vein or parallel to it. Crosscuts or additional tunnels were driven at right angles from the shaft or main tunnel into the vein. In a drift mine, the entry was driven horizontally into the seam with crosscuts or galleries drilled, again at right angles.<sup>70</sup> An average drift mine with the room and pillar process began as such:

The first opening into the mine is the main shaft, from six to twelve feet in width, in the form of a long hall stretching away into the mine. The coal is usually loosened to some extent with small charges of dynamite and then removed with picks and shovels into small cars and thence taken out to the 'dumps.' As the work progresses, timbers and scantlings are used to protect the miners from danger of the mine caving in from above. At

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<sup>68</sup>Hartwick, "Lignite Coal," The Record pp. 12-13.

<sup>69</sup>Donald Achttien, "History of Lignite Mining," North Dakota Engineer 26(January 1951): 7.

<sup>70</sup>George J. Young, Elements of Mining, (New York: McGraw-Hill Book Company, 1923), pp. 444-447.

TABLE 2

## NORTH DAKOTA LIGNITE COAL MINES, 1873-1900

Title of Mine and/or Owners	Location	Title of Mine and/or Owners	Location
Mouse River Lignite Coal Company	Davis	Lehigh Coal Mine	Lehigh
Colton Coal Company	Burlington	John Brodie	Lehigh
La Des Lac Coal Company	Burlington	Farrell Reilly	Lehigh
Smith-Kenmare Dry Coal Company	Kenmare	E. W. George	Taylor
Rouse Lignite Coal Company/ W. Augustine C. Rouse, D. A. Cannon, E. T. Tompkins	Kenmare	J. B. Bird	Belfield
S. E. Brindle	Williamsport	Gus Fingers	South Heart
Edick Mine	Livona	Ben Gattling	South Heart
Black Diamond Mine/John Satterlund	Washburn	William Klinefelter	Dickinson
A. Fahlgren	Washburn	J. S. Letts	Gladstone
George L. Robinson	Coal Harbor	Michael Joachim	Richardton
William Lacy	Coal Harbor	R. S. Brookings	Richardton
A. Youngquist	Conkling	John Conlin	Antelope
Carl Johnson	Ingersoll	A. R. Stewart	Dickinson
Wadeson Mine/H. T. Wadeson	Sims	M. M. Vineyard	South Heart
Sims Coal Company	Sims	T. O'Connor	Crofte
North Dakota Coal & Power Company	Sims	Edward O'Brien	Crofte
Feland Mine/Theodore Feland	Sims	Charles Klemp	Crofte
Gillis Brothers	New Salem	Casino Coal Mine/Ida Lewis	Painted Woods
Standard Coal Company	New Salem	Ole Anderson	Slaughter
Frank J. Keibert	Glen Ullin	Crazyman's Coulee Coal Mine/ Otto Dahl	Williston
John Bleich	Sweet Briar	Blue Grass Mining Company	Blue Grass
Jacob Christina	Mandan	Plenty Mine	Stanton
William Alder	Mandan	Foote Mine	Minot
Wilbur Mine	Mandan	Taylor Mine/Frank D. Taylor	Williston
J. E. McCoul	Dickinson	A. P. Folsom	New England
Mose Lennaville	Dickinson	Pony Gulch Mine/Thomas Dodsworth	Sykeston
George Frye	Dickinson	George's Coal/Edward George	Hebron
		People's Kenmare Dry Coal Company	Kenmare

TABLE 2--Continued

Title of Mine and/or Owners	Location	Title of Mine and/or Owners	Location
Brown and French Mine	Williston	Syndicate Coal Mine/E.D. Kelly	Minot
Dahl Mine	Williston	Pederson Mine/Michael Pederson	Carpio
Burton Mine	Sims	Reif Mine	Kenmare
Eckland Mine	Wilton	Paradis Mine/Frank Paradis, Sr.	Kenmare
Standring Mine	Coal Harbor	Angus McDonald	Minot
Washburn Coal Company	Washburn	Gassman Mine/Henry Gassman	Gassman
Northern Pacific Coal Company	Sims	Kenmare Diamond Coal Company	Kenmare
Slater Mine	White Earth	Gaerchel Mine	New Salem
Charles J. Dolan	Hazen	J. J. Sullivan	Minot

SOURCE: First Biennial Report of the Commissioner of Agriculture and Labor to the Governor of North Dakota, 1890, (Bismarck: Tribune, State Printers and Binders, 1890), pp. 37-44; Fourth Biennial Report of the Commissioner of Agriculture and Labor to the Governor of North Dakota, 1896, (Bismarck: Tribune, State Printers and Binders, 1896), pp. 76-77; Fifth Biennial Report of the Commissioner of Agriculture and Labor, 1898, (Bismarck: Tribune, State Printers and Binders, 1898), pp. 63-64; First Biennial Report of the Geological Survey, 1901, (Grand Forks: Herald, State Printers and Binders, 1901), pp. 59-70; First Annual Report of the Board of Railroad Commissioners to the Governor of North Dakota for the Year Ending November 30, 1890, (Bismarck: Tribune, State Printers and Binders, 1890), pp. 41-42; U.S., Department of the Interior, United States Geological Survey, Mineral Resources of the United States for the Calendar Year 1901, (Washington, D.C.: Government Printing Office, 1902), p. 408; Seventy-Five Years of Kenmare and the Gooseneck Area, 1897-1972 (n.p., 1972); Lutie Taylor Breeling, When The Trail Was New in Mountraille, (Ross, North Dakota: By the Author, 1956), pp. 97-98; Marion Mark and Theodore Mark, Early Hebron: Fiftieth Anniversary, 1885-1935, (Hebron, North Dakota: By the Authors, 1935), p. 19; "Burlington Doings," Ward County Reporter and Minot Journal, 22 February 1895, p. 4; "Up the Des Lacs," Minot Mirror, 20 November 1896, p. 4; "Another Coal Mine," Minot Journal, 18 May 1894, p. 4; Clement A. Lounsberry, "About Portal and Bowbells," The Record (November 1896): 13.

NOTE: A total list of mines operating before 1900 remains as an impossible task because of unavailable and unreliable material.

regular distances excavations are made at right angles from the main shaft as far as it is desired to go and then the coal is taken out between these galleries starting from the point most distant from the main shaft and as the 'rooms' are finished the props are taken out and that portion of the mine which has been worked out is allowed to cave in and abandoned. In some of the larger mines electric drills or cutters are used in cutting out sections of the coal instead of loosening it by dynamite.<sup>71</sup>

In a strip or open pit mine the lignite was reached by removing the overburden or the topsoil, clay and gravel. The overburden was removed through the use of either slip scrapers, fresnoes or hand shovels. Upon reaching the coal, dynamite was often used to break up the seam in order for effective application of the pick and shovel.<sup>72</sup> John Hatzenbuhler, who homesteaded twenty miles south of Mandan, mined lignite on a neighbor's farm and used the strip method.

During the time I was on the farm, I didn't pay out any money for fuel, there was always plenty of lignite in the hills. Most of the time I mined on John Schmidt's land. I gave him one-fourth of the coal. Sometimes I mined alone and at other times George Wetch, John Schmidt, and myself mined together. We had to remove about ten feet of ground to get at the coal. We used scrapers pulled by horses for this purpose. The vein of coal was about a foot thick. We used long iron bars to pry up and break off the coal. By working hard all day, we averaged about a ton and a half each. We hauled this home with us each night. I stored my coal in a stone coal house because it dried out too much if I left it out in the open. I burnt about fifteen tons each winter.<sup>73</sup>

Once the captains of the mining industry had their brown colored resource mined and loaded aboard the railroad cars for shipment east, they encountered the matter of the freight rates charged by the officials

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<sup>71</sup>"About Mines and Manufactures," Grand Forks Herald, Silver Anniversary Edition, June 26, 1879-June 26, 1904, p. 46.

<sup>72</sup>Alvar W. Carlson, "Lignite Coal as an Enabling Factor in the Settlement of Western North Dakota," Great Plains Journal 11(Spring 1972): 148-149.

<sup>73</sup>Peterson, Morton Prairie Roots, p. 743.

of the Northern Pacific, Soo and Great Northern Railroads. Throughout the 1890's there was considerable discontent among the mine operators over the rates charged by the railroads. Joseph Colton complained to the Board of Railroad Commissioners in January of 1890 that:

. . . if freight was reduced to reasonable rates, say \$1 per ton for 100 miles, or any fraction thereof, and two-thirds of a cent per mile for the second 100 miles, and one-half per ton per mile for every ton thereafter, we could lay down coal at rates that would be a great blessing to the people of North Dakota.<sup>74</sup>

Alexander McGillivray also submitted his grievances to the board. Like Colton, he, too, was exceedingly annoyed at the unfairness of the rates.

The railroad commissioners responded by establishing a new rate schedule. On January 30, 1890, the board presented the new rates and both the coal operators and the railroad officials agreed to adopt them.<sup>75</sup> Rate schedules are shown in table 3.

The rate was approximately one and one-half cents per ton per mile for the first 100 miles and one cent per ton per mile thereafter. This schedule also included a differential rate of forty cents against Dickinson for points located west of Crystal Springs (see map in appendix B), and a differential rate of twenty-five cents for those points east of Crystal Springs.<sup>76</sup>

The board of commissioners, however, continued to investigate the situation which soon led to direct action by the state legislature. They gathered data as to the value of lignite as a fuel and its

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<sup>74</sup>Railroad Commissioners Report, 1890, p. 39.

<sup>75</sup>Ibid., p. 45.

<sup>76</sup>Ibid.



TABLE 3

LIGNITE COAL RATES ON THE NORTHERN PACIFIC RAILROAD  
EFFECTIVE JANUARY 30, 1890

Miles From Sims	To	Sims' Rate	Dickinson's Rate
36	Mandan	\$ .75	\$1.15
41	Bismarck	1.00	1.40
53	Menoken	1.10	1.50
84	Steele	1.10	1.50
92	Dawson	1.10	1.50
104	Crystal Springs	1.15	1.55
142	Jamestown	1.75	2.00
177	Valley City	2.00	2.25
193	Tower City	2.00	2.25
215	Casselton	2.20	2.45
235	Fargo	2.25	2.50

SOURCE: First Annual Report of the Board of Railroad Commissioners to the Governor of North Dakota for the Year Ending November 30, 1890, (Bismarck: Tribune, State Printers and Binders, 1890), p. 45.

utilization in homes and industries throughout the state. They also received letters from individuals suggesting the merits of lignite and the high demand for the native fuel. With this information, the Legislative Assembly decided to set up its own rate schedule. It became law on March 3, 1890.<sup>77</sup> See Table 4 for rate schedule as of this date.

The railroad refused to conform with the legislature's schedule. They suggested to the assembly that it did not have the power to arbitrarily fix rates because Chapter 22 of the Laws of North Dakota delegated that authority to the Board of Railroad Commissioners. The railroad officials further stated that the schedule was unconstitutional in the respect

<sup>77</sup>Railroad Commissioners Report, 1890, pp. 49-55

TABLE 4

MAXIMUM RATES FOR TRANSPORTATION OF NORTH DAKOTA COAL  
EFFECTIVE MARCH 3, 1890

Miles	Rate
0-50	\$ .75
50-100	.95
100-150	1.15
150-200	1.35
200-250	1.55
250-300	1.75
300-350	1.95
350-400	2.15

SOURCE: First Annual Report of the Board of Railroad Commissioners to the Governor of North Dakota for the Year Ending November 30, 1890, (Bismarck: Tribune, State Printers and Binders, 1890), pp. 49-55.

that it fixed rates at a level below the cost of transportation. Consequently, the railroads continued to charge rates in accordance with the January 30 schedule.<sup>78</sup>

The controversy continued throughout the 1890's with the railroad commissioners acting as arbitrators between the mine operators, the legislature, the railroad officials and the public. When the railroads lowered their rates and satisfied the public, the mine operators complained to the commissioners that the rates were unfair and discriminatory. If the legislature forced the railroad officials into accepting their reductions and thereby appeased the mine operators, the railroads complained to the commissioners that the rates were unreasonable. If the commissioners set up a schedule, or approved the rates established by the legislature, it generally satisfied none of the interested parties and often only added to the profoundly chaotic issue.

<sup>78</sup>Ibid.

Several times throughout the "Gay Nineties," however, the state's officials bravely attempted to remedy the ills of the situation. In 1893, the legislature passed House Bill No. 174, which reestablished the rate schedule of March, 1890.<sup>79</sup> In December of 1894 the railroad commissioners attempted to establish another new schedule because of renewed charges of discrimination and unreasonableness. The rates were never enforced, however, because of discontent among the shippers.<sup>80</sup> Three months later, in March of 1895, the legislative assembly once again tackled the problem. This time they enacted still another maximum lignite rate schedule, although the rates they set down in Chapter 93, Laws of 1895, were very similar to those adopted in 1893.<sup>81</sup> See Table 5 for these rates.

Before the turn of the century, the board of commissioners endeavored to solve the knotted problem one more time. On April 28, 1897, after a long heated debate, the board decided to accept as reasonable and just the rate schedule set up by the legislature in March of 1895.<sup>82</sup> The contending forces continued to wrestle with the problematical

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<sup>79</sup>Laws Passed at the Third Session of the Legislative Assembly of the State of North Dakota, 1893, (Bismarck: Tribune, State Printers and Binders, 1893), p. 226.

<sup>80</sup>Fifth Annual Report of the Board of Railroad Commissioners to the Governor of North Dakota for the Year Ending December 31, 1894, (Jamestown: Alert, State Printers and Binders, 1894), p. 406.

<sup>81</sup>Laws Passed at the Fourth Session of the Legislative Assembly of the State of North Dakota, 1895, (Grand Forks: Herald, State Printers and Binders, 1895), pp. 134-137.

<sup>82</sup>Eighth Annual Report of the Board of Railroad Commissioners to the Governor of North Dakota for the Year Ending November, 1897, (Bismarck: Tribune, State Printers and Binders, 1898), pp. 51-53.

subject well into the decades of the new century, and they finally appealed to the United States Supreme Court (see chapter III, pages 23-28).

TABLE 5  
MAXIMUM RATES UNDER CHAPTER 93, LAWS OF NORTH DAKOTA  
EFFECTIVE MARCH 21, 1895

Miles	Per Ton	Miles	Per Ton
0-5	\$.30	245-255	\$1.58
5-15	.40	255-265	1.64
15-25	.50	265-275	1.67
25-35	.59	275-285	1.69
35-45	.68	285-295	1.71
45-55	.75	295-305	1.74
55-65	.81	305-315	1.75
65-75	.86	315-325	1.78
75-85	.90	325-335	1.80
85-95	.94	335-345	1.83
95-105	.98	345-355	1.85
105-115	1.02	355-365	1.87
115-125	1.06	365-375	1.90
125-135	1.10	375-385	1.92
135-145	1.14	385-395	1.94
145-155	1.18	395-405	1.96
155-165	1.22	405-415	1.98
165-175	1.26	415-425	2.01
175-185	1.30	425-435	2.03
185-195	1.34	435-445	2.06
195-205	1.38	445-455	2.08
205-215	1.42	455-465	2.10
215-225	1.46	465-475	2.13
225-235	1.50	475-485	2.15
235-245	1.54	485-495	2.17

SOURCE: Eighth Annual Report of the Board of Railroad Commissioners to the Governor of North Dakota for the Year Ending November 1, 1897, (Bismarck: Tribune, State Printers and Binders, 1898), pp. 51-53.

While the operators and the shippers of the native fuel waged political and economical warfare over the freight rates, newspaper editors and the state legislature were busy promoting its utilization. The editor of the Grand Forks Plaindealer stated on December 18, 1890

. . . that the people of North Dakota paid out last year \$5,000,000 for coal. This is a big sum to spend for fuel and every effort made to develop our local mines should be encouraged. There is an abundance of coal, and it is good coal.<sup>83</sup>

On March 9, 1891, the North Dakota Legislative Assembly passed House Bill No. 25, which provided for the use of lignite in state institutions. The act read as follows:

The various State Institutions of this State shall use for fuel native or lignite coal, and it shall be unlawful for any officers to purchase for use in said institutions any coal other than that taken from mines within the boundaries of this State: PROVIDED, That this section shall not be construed as prohibiting the use of wood for fuel at such institutions.<sup>84</sup>

As a result, many institutions and business enterprises throughout the state used lignite coal. These included the Valley City Normal School; the North Dakota State Capital and Penitentiary, both at Bismarck, the Agricultural College (North Dakota State University) at Fargo and the North Dakota Hospital for the Insane at Jamestown. Business firms powered by lignite included the North Dakota Milling Association at Mandan and Bismarck; the Dickinson Fire and Pressed Brick Company and the Russell & Miller Milling Company at Jamestown and Valley City.<sup>85</sup>

The amount of lignite produced by the infant industry in 1900 was substantial. The United States Geological Survey reported that

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<sup>83</sup>"Use Dakota Coal," Grand Forks Plaindealer, 18 December, 1890, p. 1.

<sup>84</sup>Laws Passed at the Second Session of the Legislative Assembly of the State of North Dakota, 1891, (Bismarck: Tribune, Printers and Binders, 1891), p. 125.

<sup>85</sup>Lounsberry, "The Coal Regions of North Dakota," The Record, p. 11; "North Dakota Lignite," The Northwest 11(January 1893): 18; Fifth Biennial Report of the Commissioner of Agriculture and Labor, 1898, pp. 61-62; First Biennial Report of the Geological Survey, 1901, p. 65.

the total production was 129,883 tons.<sup>86</sup> This figure, however, is far too low, even for commercial production. Many of the mines listed under table 2 were extracting and shipping coal in 1900. Furthermore, the Mouse River Lignite Coal Company had a production capacity of approximately 500 tons per day. If the owners worked the mine for 150 days, for example, their estimated production would have been 75,000 tons or over half the suggested USGS total. That was just one mine's capacity; therefore, logically reasoned, the figure advanced by the USGS for 1900 was wrong. It is also unfortunate that a reliable statistic for lignite production on the eve of the new century does not exist.

In any event the lignite that was extracted sometimes gave the inhabitants of the young state trouble, even though many considered it a very valuable commodity. Often the coal refused to ignite and when it did, it either smoldered and died out or it gave off obnoxious gases. Col. Clement Lounsberry, chief booster of the state's potentials, knew of this problem and wrote an article in The Record suggesting the most advantageous type of stove for burning lignite and the proper way to build and to keep a constant fire. He stated:

The most desirable stove for lignite is one with a large fire pot, straight sides, large grate surface, and large doors. . . In building a fire with lignite coal use small chips and sharp pieces to start with, and add gradually larger pieces as the fire gains headway. Don't allow the fire to get too low before adding fresh fuel. . . If low, don't smother with large quantities, but add sparingly of fine coal.

Lounsberry's final comment on the matter was, "Don't get discouraged, for if you do not get good results it is because you do not understand

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<sup>86</sup>U.S., Department of the Interior, United States Geological Survey, Mineral Resources of the United States for the Calendar year 1901, (Washington, D.C.: Government Printing Office, 1902), p. 409.

the fuel."<sup>87</sup> Whether those staunch pioneers understood the fuel or not, many of them thought of lignite as a "godsend."<sup>88</sup> Others considered themselves "very fortunate" to have a bed of lignite coal running beneath their fertile topsoil.<sup>89</sup> Still others viewed the native coal as a marketable item that provided "a nice bit of money."<sup>90</sup>

It has also been suggested that lignite was a determinant in the settlement of western North Dakota. In his article, "Lignite Coal as an Enabling Factor in the Settlement of Western North Dakota," Alvar W. Carlson stated that:

The availability of lignite as a fuel was probably as important as the availability of prairie sod as a building material in the establishment and sustenance of rural settlement in this region of the Great Plains . . . Without it, settlement certainly would have been more difficult and expensive.<sup>91</sup>

Elwyn B. Robinson in his History of North Dakota suggested that fuel was a greater problem than food during settlement.<sup>92</sup> Lutie Taylor Breeling, a school teacher from Ross in Mountrail County also declared that "without it the Missouri Plateau could not have been settled."<sup>93</sup>

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<sup>87</sup>Lounsberry, "The Mouse River Lignite Coal Company," The Record, p. 13.

<sup>88</sup>Mrs. Dave Robinson, "Use of Coal in the Days BT," Trails and Smoke Signals, vol. 4, no. 4, 1970, Official Newsletter of the North Dakota Historical Society, Inc., p. 2; Prairie Tales, (Bowman County, North Dakota: Rural Area Development Committee, 1965), p. 324.

<sup>89</sup>Mrs. D. H. Dettman, Chairman, Beulah, North Dakota, Golden Anniversary, 1914-1964, (n.p., 1964), p. 133.

<sup>90</sup>Lounsberry, "Morton County Coal Fields," The Record (June 1898): 243.

<sup>91</sup>Carlson, "Lignite Coal as an Enabling Factor in the Settlement of Western North Dakota," Great Plains Journal, p. 145.

<sup>92</sup>Elwyn B. Robinson, History of North Dakota, (Lincoln: University of Nebraska Press, 1966), p. 160.

<sup>93</sup>Breeling, When the Trail was New in Mountraille, p. 115.

During the period 1873 to 1900 the fledgeling industry made significant advancements. The railroads, the governmental offices, and the newspapers participated in promotional activities. Once the homesteader arrived, lignite enabled him to remain in this treeless region. Lignite furnished a necessary, cheap and abundant source of heat, although on occasion it refused to burn properly. Lignite encouraged investment by those interested in its commercial production. Many of the mines opened were small one-man operations. Yet many other mining firms had a long list of employees. Some of the attempts to mine the brown coal were profoundly unsuccessful. On the other hand, many more became flourishing business concerns. The lignite industry, like other novel enterprises, was not free from problems. The freight rate controversy involved one battle after another, and the final engagement would not take place until several years into the new century. The industry had come a long way from the first fruitless efforts of Dennis Hannifin and John Warn. By 1900, the lignite mining industry had a secure foundation in the state of North Dakota.



## CHAPTER III

### THE BUSY YEARS 1900-1920

#### Coal Towns, Labor Strikes and Quiet Research

As the new century arrived, another stage in the mining of lignite coal began--one that was complete with new problems, old dilemmas, and multi-dimensional growth in the industry. The first score years represented an energetic period when many new coal mining towns and firms made their debut, when the United States government ventured into the mining of North Dakota lignite, when farmers and ranchers operated cooperative mines and when the state of South Dakota owned a mine in North Dakota. It was also a troubled time which involved the rise of labor unions, the coal strike of 1919, and the decisions of the United States Supreme Court in relation to the freight rates controversy. It was a progressive time in which legislation led to the creation of the state coal mine inspector and the licensing of coal mine operators. Not only did the industry change, but experiments were undertaken to alter the physical structure of lignite itself. Tests concerning the feasibility of briquetting and gasifying lignite were conducted at the University of North Dakota.

The period 1900-1920 was a dynamic era in the growth of lignite mining and it began when a general decided to build a railroad. General

William D. Washburn<sup>1</sup> began construction of the Bismarck, Washburn & Fort Buford Railroad north to Wilton, in northern Burleigh County. The tracks of Washburn's railroad reached the Wilton townsite in July, 1900, shortly after the discovery of lignite at that place. Seams averaging sixteen feet in thickness were located fifty feet below the surface near Wilton. Without delay, General Washburn began building what was to become a gigantic coal factory. The main shaft was sunk through the overburden and a tunnel was driven into the dense deposit. By the middle of September the mine was already producing fifty tons per day, ". . . an amount inadequate to the demand."<sup>2</sup>

As the seasons passed, the industry at Wilton grew. Washburn installed two coal chutes, a generating plant to power the six Jeffrey undercutting mining machines, trolley cars to transport the coal to the surface, electricity in the main tunnel, and a tipple next to the railroad tracks. He extended the main shaft to 150 feet and dug several 300 to 400 foot tunnels that reached seventy feet below the surface of the mine entry. Rooms were cut off the main tunnel, and two air shafts were

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<sup>1</sup>General William Drew Washburn was known in both the industrial and political worlds. He was involved with the organization of the Crosby-Washburn and the Pillsbury-Washburn flouring mills in Minnesota. Lumbering and railroad enterprises measured among his business interests. Politically, Washburn was prominent nationally as well as in the state of Minnesota. He served as surveyor-general in that state from 1861 to 1865 and as a member of the House of Representatives in 1869 and in 1871. He also served as United States Senator from Minnesota from 1889 to 1895. See "W. D. Washburn Passed Beyond," Bismarck Tribune, 30 July, 1912, pp. 1, 5.

<sup>2</sup>Frances Wold, "The Washburn Lignite Coal Company: A History of Mining at Wilton, North Dakota," North Dakota History 43(Fall 1976): 4-6.

installed. The General also put his organizational talents to work with the creation of what became known as the Washburn Lignite Coal Company. The enterprise was incorporated under the laws of Minnesota, with a \$500,000 capitalization, on Christmas Eve of 1902.<sup>3</sup>

During the succeeding ten years, the Washburn Lignite Coal Company grew to become the major producer of North Dakota's subsurface resource. Productivity in 1902 was 475 tons per day, and by the winter of 1903 it reached 1,000 tons.<sup>4</sup> In 1910 the total output was 115,340 tons which sold for \$1.50 per ton at the mine head. At that time the company hired two hundred miners during the winter and sixty during the summer. Those who extracted coal in the main entries were paid \$.35 per ton, and those who cut and trimmed it out of the rooms received \$.30 per ton. Not only was the production level increased during this ten year span, but improvements in the mine also provided better working conditions for the miners. Washburn installed Brest undercutting machines, a two-cage hoist, box-car loaders, a sixteen foot fan for better ventilation and four electric pumps to drain water out of the tunnels and rooms.<sup>5</sup>

Washburn was not only concerned about technological improvements and production levels but also adequate housing for the miners and their families. The first result of the housing program was a large boarding house. It was known as the "Beanery" and it accommodated seventy-five

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<sup>3</sup>Wold, "The Washburn Lignite Coal Company," pp. 6, 8.

<sup>4</sup>Ibid., p. 8.

<sup>5</sup>Fourth Biennial Report of the State Engineer to the Governor of North Dakota for the Years 1909-1910, (Bismarck: Tribune, State Printers and Binders, 1910), pp. 71, 76, 87; Second Biennial Report of the Geological Survey of North Dakota, 1902, (Bismarck: M. H. Jewell, State Printer, 1902), p. 62.

miners. Local women were hired to do the cooking, cleaning and laundering. Before long the Beanery became a gathering place for social events such as dances, card parties, school plays, and plain conversation.

Because the Beanery was not equipped to handle miners with families, Washburn formulated plans for a larger complex of private dwellings in 1901. The resulting village of approximately thirty yellow bungalows was known as Chapin. The homes were crude and rather small, but ". . . they provided shelter and rented for a small charge."<sup>6</sup> Chapin also included a school, the mine tipple, railroad loading platforms, offices, bathhouses, and the mine manager's home. By 1907 housing again had become a problem. In September of that year construction for twenty houses began just south of the mine. This complex became known as Langhorn. The homes were more modern and larger than those in Chapin and they were painted white rather than yellow.<sup>7</sup>

On August 2, 1912, General Washburn died at the age of eighty-one, and a new era in the history of the Washburn Lignite Coal Company began. Mine Superintendent Patrick J. Cahill instituted a new policy regarding the daily operating hours. In previous years the company used both day and night shifts, but only during the winter season. By the fall of 1912, however, Cahill began working two shifts continually, keeping the mine in operation twenty hours a day. The superintendent also reorganized the production process, and it proved to be more efficient:

A force of men works at night with powder and cutting machines getting out enough coal to fill up all empty cars. When the day shift comes on duty there is enough lignite at the bottom of the

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<sup>6</sup>Wold, "The Washburn Lignite Coal Company," p. 6.

<sup>7</sup>Ibid., pp. 6, 9.

shaft to begin hoisting at once. Coal is being brought to the surface just as fast as the cages can operate, continuously from 7 a.m. to 6 p.m. More coal can be put out than by two shifts. The average output is now 1500 tons a day.<sup>8</sup>

In 1915 the lignite in the Wilton Mine began to run out. The company decided to open another mine one and a half miles east of the enterprising coal town. The new mine was referred to as simply Mine #2 and it was opened in 1916 complete with an office, a washroom, a powder house and storage facilities made of brick, a tippie constructed of wood, and four massive electrical generators.<sup>9</sup> With the opening of Mine #2, the company enjoyed a period of general prosperity from 1915 to 1920 (with the exception of the coal strike of 1919 which will be discussed later in this chapter). Mine #2 produced a vast amount of coal which was shipped to various cities, towns, institutions and businesses throughout North Dakota and Minnesota.

Washburn was not the only person to mine lignite in the Wilton area. Nine other people, including one woman, were also interested in the soft coal. South of Wilton, Oscar Eckman opened a mine as did Charles Peterson. Two miles east of the town, the Lind Mine was owned and efficiently operated by Mrs. Annie C. Lind. The other five operations were the Anderson, Asplund, Backman, Johnson and Casino mines. These enterprises were rather small and served only a local trade, with the exception of the Backman and Peterson mines that did ship some lignite.<sup>10</sup>

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<sup>8</sup>Wold, "The Washburn Lignite Coal Company," p. 12.

<sup>9</sup>Ibid.

<sup>10</sup>State Engineer's Report, 1910, p. 86; Sixth Biennial Report of the State Engineer to the Governor of North Dakota for the Years 1913-1914, (Devils Lake: Journal Publishing Company, State Printers, 1914), p. 57; Second Annual Report of the State Mine Inspector to the Governor of North Dakota for the Period Ending October 31, 1920, (Bismarck: Tribune, State Printers, 1920), p. 11.

Wilton was a booming community by 1920. The city claimed several hotels, hardware stores, banks, livery stables, and churches, a fire department, electric lights (powered by lignite coal), telephone service and concrete sidewalks. The population was 1,026 and of that number about one-third or 325 were engaged in the production of lignite coal.<sup>11</sup> The output of the Washburn Company in that year was 221,494 tons, valued at \$646,359.97.<sup>12</sup> The site that General Washburn platted as Wilton in 1899 had become a bona fide coal town within the first twenty years of the twentieth century.

Another coal town made its debut in the spring of 1907. Scranton, located in eastern Bowman County (see map in appendix C) and named after the coal mining town in Pennsylvania, was "ushered into existence June 27th, 1907 . . ."<sup>13</sup> and named by the coal baron, John F. Brodie. The Dickinson Press carried an informative article on the opening of Mr. Brodie's town and the new Scranton Coal Mine.

The platting of Scranton, the new mining town between Hettinger and Bowman on the Pacific Coast extension of the Milwaukee [Railroad], is significant. Col. A.P. Peake of Valley City, this state, and Representative J. F. Brodie of this city, were at Scranton the past week where they met E. D. Sewall, President, and H. B. Earling general superintendent [sic] of the Milwaukee railroad [sic] and arranged for placing lots of the new town on the market. Messrs. Peake and Brodie, owners of the Consolidated Coal Co. mines at Dickinson and New Salem, have opened a 19 feet [sic] vein of coal on the Milwaukee at Scranton which is said to be the finest coal mining proposition in the state.<sup>14</sup>

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<sup>11</sup>J. F. Wathey, "The County of McLean," North Dakota Magazine 3(September 1908): 49; U.S., Department of Commerce, Bureau of the Census, Fourteenth Census of the United States, 1920: Population, vol. 1, 271; State Mine Inspector's Report, 1920, p. 9.

<sup>12</sup>State Mine Inspector's Report, 1920, p. 11.

<sup>13</sup>"Thriving Coal Towns of North Dakota," North Dakota Magazine 3(January 1909): 27; Mary Anne Barnes Williams, Origins of North Dakota Place Names, (Bismarck: Bismarck Tribune, 1966), p. 43.

<sup>14</sup>"Coal and Clay," Dickinson Press, 16 November 1907, p. 1.

The Scranton Coal Mine was opened in early 1907, before the town had become a thriving community. The underground slope mine had a double entry system of mining. The nineteen foot bed of coal was located thirty feet below the surface and approximately sixty percent of the bed was excavated. A windmill was built to keep the mine dry, and an air shaft supplied adequate ventilation on ordinary days. An exhaust fan made from a threshing machine blower created a sufficient draft when the air shaft failed in its appointed task. A short railroad spur was built up to the mine entrance. Horse power carried the brown coal from the slope to the tipple. In 1910 the company hired thirty miners during the winter months and eight during the summer months. Generally, the employees were paid \$.50 for every ton loaded into the railroad cars. The average daily output was forty-seven tons and the average selling price at the mine head was \$1.25. The total production for 1910 was 8,584 tons, which grossed the owners of the Consolidated Coal Co. \$11,588.40.<sup>15</sup>

Between the years 1912 and 1916 the title to the Scranton Coal Mine was transferred twice. In 1912 Brodie and Peake sold their investment to the newly organized Scranton Coal Company. The enterprise was incorporated under the laws of North Dakota, with a capitalization of \$50,000. From the time of its organization until Charles A. Johnson, a South Dakotan, acquired ownership of the property in 1916, the Scranton Coal Company excavated 33,367 tons<sup>16</sup> of lignite. The new proprietor

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<sup>15</sup>State Engineer's Report, 1910, pp. 70, 76, 84.

<sup>16</sup>State Engineer's Report, 1914, p. 123; Seventh Biennial Report of the State Engineer to the Governor of North Dakota for the Biennial Period Ending June 30, 1916, (Fargo: Walker Bros. & Hardy, State Printers, 1916), p. 110; Eighth Biennial Report of the State Engineer to the Governor of North Dakota For the Biennial Period Ending June 30, 1918, (Bismarck: Tribune Printing Co., 1918), p. 134.

renamed the operation the Johnson Fuel Company and enlarged the facility to include a lignite briquetting plant, which was built by two German engineers, and also a power plant which furnished Scranton with electricity. By 1920 the Johnson Fuel Company was producing over 13,000 tons of coal and had a monthly payroll of \$10,000.<sup>17</sup>

North Dakota Magazine, one of the state's leaders in unbridled boosterism, proclaimed that:

Scranton is destined, at no distant day, to be one of the cities of southwestern North Dakota. It is surrounded in all directions, as far as an antelope can run in an afternoon, by as fine and fertile country as the sun shines on, which is rapidly settling up and will soon be one vast country of homes and farms.<sup>18</sup>

Before long the young coal town not only had a number of homes and farms but also hardware stores, a grocery and dry goods store, a barber shop, a lumber yard, an implement dealership, a harness shop, livery stables, banks, hotels and a theatre "showing silent films." A brick yard, using native clay resources ". . . was [also] built up near the mine with a large kiln to burn the brick, using lignite for fuel."<sup>19</sup> Scranton grew to a population of 214 by 1910. From that time until the beginning of the third decade, the mining town grew more slowly. In 1920, Scranton could claim only 353 inhabitants.<sup>20</sup>

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<sup>17</sup>Prairie Tales, (Bowman County, North Dakota: Rural Area Development Committee, 1965), p. 192; State Mine Inspector's Report, 1920, p. 11.

<sup>18</sup>"Thriving Towns," North Dakota Magazine, p. 27.

<sup>19</sup>Prairie Tales, pp. 191-192.

<sup>20</sup>Fourteenth Census of the United States, 1920, p. 271.



While the barons of the Consolidated Coal Company were diligently harvesting the soft coal in Scranton, a medical doctor was engaged in the building of a new town in Mercer County. Beulah, as it came to be known, had a curiously, illogical origin.

Early in 1911, settlers on either side of the Knife River Valley watched the building of a large, commodious house and a two story business structure with a mixture of bewilderment and amusement. It just didn't add up--why would Dr. [Norman E.] Vredenburg of Hebron build, what looked like the beginning of a new trading store, here in the middle of the prairies? This particular spot was inaccessible from the south, for there were no bridges spanning the Knife River. Farrington was situated a mile to the east and was right on the bank of the best river crossing--the south farmers would go no further to do their trading. The north farmers had adequate trading facilities in Kasmer, Kronthal, Expansion and Mannhaven, so they wouldn't be doing their trading here.

When the doctor was finished he named his new town, Troy. He never moved into his house or started a business. No one seems to know why or what prompted him to erect these buildings . . . 21

Perhaps the doctor was speculating on a boom town and lost interest when the Northern Pacific Railroad failed to arrive according to his schedule. Nevertheless, Dr. Vredenburg quickly sold the townsite to the Tuttle Land Company. It was then resurveyed and the name was changed to Beulah.<sup>22</sup>

Lignite mining was not responsible for the creation of Beulah, but it did contribute significantly to its growth and development. For the first few years of its history, Beulah ". . . did not forge ahead like the other towns." It had a few enterprises, including a lumber yard, a bank, a newspaper and a mercantile company, but businessmen were inexperienced and lacked sufficient capital. Good roads into Beulah

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<sup>21</sup>Mrs. H. D. Dettman, Chairman, Beulah North Dakota Golden Anniversary, 1914-1964, (n.p., 1964), p. 4.

<sup>22</sup>Dettman, Beulah Golden Anniversary, p. 4.

were non-existent. More importantly, farmers received prices for grain that were three to five cents lower than those in neighboring communities. These obstacles were alleviated in due time, but with ". . . the discovery of good coal veins and the development of coal mining, Beulah soon became the largest town in the county."<sup>23</sup>

Between the years 1915 and 1920, five coal mines commenced operations within the Beulah area. The Schmidt Coal Mine, owned by George G. Schmidt, was an underground structure located seven and one half miles northwest of the town. In 1916 the mine produced 1,015 tons which were sold within the local trade area. In the spring of 1915, Schmidt opened another mine. Known as the Standard Coal Mine, it consisted of eighty acres of land on the north side of Beulah. Productivity in 1916 reached 9,019 tons. Of that amount, 2,985 tons were shipped out over the rails of the Northern Pacific; the remainder was purchased by the town populace. In March, 1917, the operation was abandoned because of extensive water in the mine. Two other small operations serving a local demand were the Kesler Coal Mine and the Dilger Coal Mine. Together the two wagon mines produced approximately 2,500 tons in 1917.<sup>24</sup>

The four operations listed above were small in comparison to the Beulah Coal and Mining Company which had its origin in 1915 when Carl Semmler, the county auditor, purchased the land adjoining the east border of the townsite. Semmler opened a mine, but the venture failed and the workings were abandoned. In 1916, Madison M. Mounts, who had

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<sup>23</sup>C. B. Heinemeyer, Historical Data of Mercer County, North Dakota, (Hazen: Hazen Star, 1932), p. 51.

<sup>24</sup>State Engineer's Report, 1916, p. 140; State Engineer's Report, 1918, pp. 117, 122, 152.

considerable experience with coal mining in Montana, bought the old Semmler Mine.<sup>25</sup> Mounts, his brother Charles, and his friend A. B. Falconer, a mining engineer, began drilling tests to determine the extent of the coal beds. The results of the inquiry confirmed the existence of lignite beds ranging from as high as eighteen to twenty-two feet in thickness.<sup>26</sup>

In 1917 Mounts, L. C. Pettibone, President of the Tuttle Land Company, Edmund A. Hughes and C. B. Little organized the Beulah Coal and Mining Company. Mounts located "the best possible site for the main "shaft" and sunk it fifty-six feet into a bed fourteen feet thick. The shaft had two sections, one with a stairway for access and the other with a steam hoist for transporting the lignite to the surface. Two to three feet of coal served as the roof and props made of tamarack, a type of cedar, were placed in the rooms for support. An air shaft and a steam-driven fan provided ventilation. Excess water was removed by a steam pump and two electrically driven pumps. The company built several buildings including an office, a tiple, a power plant, a hotel, a powder magazine, a bunk house and a blacksmith shop.<sup>27</sup> In less than three years after its organization, the fledgeling mining company produced over 76,000 tons of lignite. Thirteen miners were employed along with thirty-nine other workers who were associated with the Beulah company on various production levels.<sup>28</sup>

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<sup>25</sup>C. B. Heinemeyer and Mrs. Ben Janssen, History of Mercer County, North Dakota, 1882 to 1960, (Hazen: Hazen Star, 1960), pp. 40, 42.

<sup>26</sup>Dettman, Beulah Golden Anniversary, p. 138.

<sup>27</sup>Heinemeyer and Janssen, History of Mercer County, p. 42; Dettman, Beulah Golden Anniversary, p. 138; State Engineer's Report, 1918, pp. 102, 149.

<sup>28</sup>State Mine Inspector's Report, 1920, pp. 9, 12.

By 1920 Beulah was not an agricultural community; it was a coal mining town. The lignite industry stimulated the economy of the incorporated village of 552 inhabitants.<sup>29</sup> Even the small operations contributed to its financial life. The larger enterprise, the Beulah Coal and Mining Company, with a profit of over \$130,000 in 1920,<sup>30</sup> was a most influential factor in the town's welfare and development. When Beulah's first wooden buildings were erected in early 1911, many considered Dr. Vrendenburg's efforts a folly. Nine years later Beulah was quite the contrary. As time passed, Beulah would become very well known for its lignite production. The Beulah Coal and Mining company would be reorganized as the Knife River Coal Mining Company and it would become the largest underground mine in the United States.

The lignite industry was responsible for the platting of numerous other townsites and the incorporation of several cities in western North Dakota. By 1920, Hanks, in Williams County, was a typical mining town with five coal companies excavating its subterranean wealth.<sup>31</sup> Noonan, located on section four of Coal Field Township in eastern Divide County,<sup>32</sup> became a recognized mining area. In 1920, the small town had six coal companies with a combined productivity of over 45,000 tons. There were many other communities in the western part of the state that became producers of the natural resource. They included Velva, Haynes, Reeder, Medora, Bowman, Columbus, Coalbank, Underwood, Garrison, Hazen

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<sup>29</sup>Fourteenth Census of the United States, 1920, p. 270.

<sup>30</sup>State Mine Inspector's Report, 1920, p. 12.

<sup>31</sup>State Mine Inspector's Report, 1920, p. 13.

<sup>32</sup>Williams, North Dakota Place Names, p. 94

Hebron, Center, Zahl, Zenith, Glen Ullin and New Salem (see map in appendix C).<sup>33</sup>

In addition to the fledgeling coal towns of the early twentieth century, the well-seasoned coal districts continued to quarry lignite at a constant rate. From 1910 to 1920 in the Minot-Burlington area, twenty-one coal firms carried on the harvest. Some were older, established businesses such as the Davis and Colton mining companies. Others were newer operations like the Hunewell, Hard Luck, Burlington City, Casteel and Cherry Vale companies. Kenmare maintained its position as a major coal district with eighteen mines in operation throughout the period 1910 to 1920, and Williston also remained as a commercial mining center. In 1910, Williston had seven mines, and by 1920, fifteen coal firms extracted roughly 61,000 tons, over three-fourths of the total productivity for Williams County. In the Dickinson-Lehigh district, the production level continued to be high, although there was a decrease in the number of mines. In 1920, the two remaining coal firms, the Pittsburgh and Binek coal companies mined 38,965 tons, almost three-fourths of the total for Stark County.<sup>34</sup>

Besides wagon mines and commercial firms, cooperative mines were created and provided investors with fuel at a reduced price. The Farmer's Coal Association of Haynes in Adams County was such an

<sup>33</sup>State Mine Inspector's Report, 1920, pp. 7-8, 11.

<sup>34</sup>State Engineer's Report, 1910, pp. 61-62; Fifth Biennial Report of the State Engineer to the Governor of North Dakota for the Years 1910-1912, (n.p., n.d.), p. 65; State Engineer's Report, 1914, pp. 59-60; State Engineer's Report, 1916, p. 71; State Engineer's Report, 1918, pp. 60-61; First Annual Report of the State Mine Inspector to the Governor of North Dakota for the Period Ending October 31, 1919, (n.p., n.d.), pp. 8-9; State Mine Inspector's Report, 1920, pp. 8, 12.

enterprise. This cooperative company of farmers opened a mine about three miles north of Haynes in 1908. The coal bed was twelve to thirteen feet thick. The slope-style mine had no general system of mining; the rooms were irregular in width and length. Annually, the mine produced about 1,000 tons. In 1914 the company was incorporated under the laws of North Dakota and capitalized at \$18,000. The farmers invested \$3,000 in surface equipment and \$250 in tracks and cars. The mine operated for the benefit of its stockholders and coal was sold to them at \$1.35 per ton, \$.40 cheaper than the selling price of their neighboring lignite firm, the Haynes Coal Company.<sup>35</sup> Another cooperative mine was operated by those of the agricultural persuasion in Bowbells, Burke County (see map in appendix C). Known as the Farmer's Lignite Coal and Transportation Company, it, too, functioned for the advantage of its members and sold fuel to them at about the cost of production.<sup>36</sup>

Another unconventional mining firm was the Clermont Coal Company, also located in Haynes. It began as a normal mining venture in 1908 when A. W. Peterson opened a mine north of the town on a section of school land leased to him by the state. In the spring of 1912, the lease expired and Peterson moved the operation to an adjoining section of land where the coal was sixteen feet thick. The Clermont Coal Company bought the workings and built a tippie with two stationary screens for sorting the coal and storage bins with a combined capacity of twenty tons. A steam hoist was used for hauling the coal cars from the mine,

<sup>35</sup>Sixth Biennial Report of the Geological Survey of North Dakota 1912, (n.p., 1912), p. 79; State Engineer's Report, 1914, pp. 106, 121.

<sup>36</sup>State Engineer's Report, 1912, p. 121; State Engineer's Report, 1916, p. 152.

". . . the hoist being made of a traction engine, one wheel of which is firmly anchored, the other being converted into a drum." A nearby well provided the water for steam.<sup>37</sup> The mine remained under the ownership of local businessmen until early 1920. At that time, the South Dakota Coal Commission at Pierre bought the operation. In a short time it made significant improvements at the mine. The coal commission harvested 8,463 tons in 1920. The coal was shipped south over the Chicago, Milwaukee and St. Paul Railroad and was used to heat the institutions of North Dakota's sister state.<sup>38</sup> For several years, South Dakota institutions were warmed by North Dakota lignite.

There was also a most unique mine north of Williston; it was uncommon because coal was mined only during the summer months. The United States Reclamation Service opened the Government Mine four and one-half miles northeast of the city on the west bank of the Little Muddy Creek in 1907. The mine was a drift type with a double entry and room and pillar system of mining. The coal bed was about ten and one-half feet thick at a depth of 150 feet. In 1910 the mine produced approximately 4,500 tons of lignite. Ten miners were hired during the summer season and the operation shut down throughout the winter months.<sup>39</sup> The Government Mine did not produce coal for heating purposes, it was used solely in a project for irrigating thousands of acres of farmland in the valley of the Little Muddy and the bottom lands of the Missouri River.

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<sup>37</sup>State Geological Survey, 1912, p. 79; State Engineer's Report, 1914, p. 121; State Engineer's Report, 1916, p. 125.

<sup>38</sup>State Mine Inspector's Report, 1920, pp. 6, 11, 13, 18.

<sup>39</sup>State Engineer's Report, 1910, pp. 74, 78; State Engineer's Report, 1918, p. 173; State Engineer's Report, 1914, p. 148.

The lignite from the Government Mine supplied the Williston and Buford-Trenton Irrigation Projects. Electricity powered these pumping projects, and after investigations of the nearby coal fields conducted by the United States Geological Survey, the engineers of the Reclamation Service decided that lignite would generate the necessary electrical power.<sup>40</sup> The process went as such: when the coal was removed, it was hauled from the mine by mules and dumped into the tippie, which had five concrete storage bins, each with a capacity of 100 tons. Once in the storage bins, the lignite was fed into a crusher and then transported by a chain carrier into the boiler room of the main power plant at station number 1, only a few hundred yards from the mine.<sup>41</sup> There, the coal was fired, electricity was generated, and eventually Missouri River water reached the dry farmlands, where three crops of alfalfa were harvested annually instead of one.<sup>42</sup>

After the turn of the century, the number of coal mines in the state increased at the continuous rate. Table 6 indicates the number of mines, the productivity and the dollar value of the coal mined from the years 1910 to 1920.

The figures in Table 6 are not totally accurate, for many mines have escaped historical record. The figures for 1910 and 1912 were low because the mines were not inspected; data sheets were sent to owners and operators and many failed to complete and return them. In 1913

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<sup>40</sup>"The Williston and Buford-Trenton Irrigation Projects," North Dakota Magazine 2(August 1907): 1,4.

<sup>41</sup>State Engineer's Report, 1914, p. 148; State Engineer's Report, 1918, p. 173.

<sup>42</sup>"The Williston and Buford-Trenton Projects," North Dakota Magazine, p. 7.



TABLE 6

## COAL MINE STATISTICS 1910-1920

Year	Number of Mines	Productivity (tons)	Value
1910	84	416,580	\$ 596,692.75
1911	100	486,842	699,471.55
1912	82	501,827	795,329.85
1913	109	431,054	719,050.26
1914	128	569,869	920,689.77
1915	137	586,116	921,835.49
1916	140	680,101	1,166,211.61
1917	196	885,473	1,709,039.48
1918	No Report	No Report	No Report
1919	156	783,694	No Report
1920	136	878,969	2,166,168.96

SOURCE: Fifth Biennial Report of the State Engineer to the Governor of North Dakota for the Years 1910-1912, (n.p., n.d.), pp. 59, 94; Sixth Biennial Report of the State Engineer to the Governor of North Dakota for the Years 1913-1914, (Devils Lake: Journal Publishing Company, State Printers, 1914), pp. 51, 110; Seventh Biennial Report of the State Engineer to the Governor of North Dakota for the Biennial Period Ending June 30, 1916, (Fargo: Walker Bros. & Hardy, State Printers, 1916), pp. 63-64, 117; Eighth Biennial Report of the State Engineer to the Governor of North Dakota for the Biennial Period Ending June 30, 1918, (Bismarck: Tribune Printing Company, 1918), pp. 51-52, 121; First Annual Report of the State Mine Inspector to the Governor of North Dakota for the Period Ending October 31, 1919, (n.p., n.d.), p. 14; Second Annual Report of the State Mine Inspector to the Governor of North Dakota for the Period Ending October 31, 1920, (Bismarck: Tribune, State Printers, 1920), pp. 6-7.

the production was low as a result of moderate weather throughout the fall and winter months. The decrease in the number of mines and the productivity during 1919 and 1920 was attributed to the fact that many mines were consolidated during that time period.<sup>43</sup> Furthermore, these

<sup>43</sup>State Engineer's Report, 1912, pp. 59, 94; State Engineer's Report, 1914, pp. 51, 110; State Engineer's Report, 1916, pp. 63, 64, 117; State Engineer's Report, 1918, pp. 51-52, 121; State Mine Inspector's Report, 1920, pp. 6-7.

statistics represent the number of mines reported by the inspection department, but not all of the mines were active or on a productive scale.

Throughout the entire 1900-1920 era, the number of coal mines multiplied at a somewhat constant rate.<sup>44</sup> This factor soon prompted the Legislative Assembly of the state to provide for the regulation of coal mines and the recording of statistical information relative to the mining industry. During the 1907 Legislative Session, Representative John F. Brodie introduced House Bill No. 263, known as the Coal Mine Statistics Act. Section one of the document called for the licensing of coal mine operators.

The operator of each and every coal mine operated in the state of North Dakota, and selling coal to the general public, shall annually, on or before the tenth day of July, . . . procure a license . . . for which he shall pay a fee of five dollars.

In the event that an operator failed, neglected or refused to acquire a license, section four of the bill carried a penalty. Failure to comply with the law was determined as a misdemeanor and the negligent operator, upon conviction, was ". . . subject to a fine of one hundred dollars, or imprisonment, as the court may determine." Representative Brodie's bill also provided for the keeping of records on every operating

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<sup>44</sup>The figures for the years 1900-1909 are highly inaccurate and unreliable. For example, the Commissioner of Agriculture and Labor stated in the 1908 report that "the reports have not been complete because the operators have not kept records covering all the data required." See Tenth Biennial Report of the Commissioner of Agriculture and Labor to the Governor of North Dakota for the Term Ending June 30, 1908, (Bismarck: Tribune, Printers and Binders, 1908), p. 11.

<sup>45</sup>Laws Passed at the Tenth Session of the Legislative Assembly of the State of North Dakota, 1907, (Bismarck: Tribune, State Printers and Binders, 1907), pp. 72-73.

mine. The Commissioner of Agriculture and Labor was responsible for the collection of the necessary data, which included information such as the name of the mine, the owner and operator, the wage scale, the production level and other pertinent facts.<sup>46</sup>

During the same legislative session, a bill was introduced in the House which provided for the inspection of coal mines. The State Engineer was appointed as the ex officio coal mine inspector for the state. His duties required him to make a thorough inspection of every operating mine. He was also expected to submit a highly detailed report on mining conditions to the Governor. The State Engineer's report was similar to that of the Commissioner of Agriculture and Labor, with the exception of detail and the fact that the State Engineer's foremost responsibility was to examine the conditions of the mines with particular reference to the safety of the employees. The Coal Mine Inspection Act became law March 14, 1907.<sup>47</sup>

Twelve years later, another essential piece of legislation became law. In 1919 the progressive political forces in the state investigated the coal mining industry and their report indicated that ". . . the coal mines of North Dakota are now being run and operated in a manner that is dangerous to the life and safety of the miners of the State of North Dakota. . . ." <sup>48</sup> Conditions in the mines were often dangerous; ventilation

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<sup>46</sup>Ibid.

<sup>47</sup>Laws Tenth Session, 1907, pp. 77-78.

<sup>48</sup>Laws passed at the Sixteenth Session of the Legislative Assembly of the State of North Dakota, 1919, (Bismarck: Tribune, State Printers and Binders, 1919), p. 312.

was poor, escapement exits were non-existent, props were inadequate. Stagnant water in the main airways, rooms, and entries became a sanitary problem, and together with the lack of safety devices and the carelessness of employees, it added up to a serious situation which demanded emergency legislation. The result was the North Dakota State Coal Mining Code.<sup>49</sup>

The document, containing ninety-two sections, was most significant for its creation of the office of the State Coal Mine Inspector. As outlined in section two, the Governor was empowered to appoint the inspector with the advise and consent of the Senate. A prospective candidate for the office had to meet certain requirements including United States citizenship, five years experience with coal mining and a competent knowledge of the different types of mining, ventilation systems, and explosive and noxious gases. The inspector's duties and rights were quite comprehensive.

The State Coal Mine Inspector shall have the right and it is hereby made his duty, to enter, inspect and examine any coal mine or any shaft, drift or slope in the process of sinking for the purpose of mining coal in this State, and the workings and the machinery belonging thereto, at all reasonable times, either by day or night. He shall also have the right and it is his duty to make inquiry into the condition of such mine, workings, machinery, scales, ventilation, drainage, method of lighting or using lights, and into all methods and things connected with or relating to, as well as to make suggestions providing for the health and safety of persons employed in or about the same, and especially to make inquiry whether or not the provisions of the laws providing for the regulation of the coal mines, or other Acts which may hereinafter be enacted governing coal mines, have been complied with. It shall also be the duty of the said Coal Mine Inspector to carefully examine all the coal mines in operation in this State annually, and all mines having an annual output of 1,200 tons or more at least, every six months, and oftener if necessary to see that every precaution is taken to insure the safety of all the working men that may be engaged in such coal mine.<sup>50</sup>

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<sup>49</sup>Ibid.

<sup>50</sup>Laws Sixteenth Session, 1919, pp. 284-286.

The remaining portions of the document dealt with the factor of safety. Regulations were drawn up and approved, and the resulting code covered the gamut of the coal mining industry--from the proper procedure for sinking a shaft for a new mine, through the security systems required in operating mines, to the safety measures instituted against the dangers of worked out or abandoned mines. Some of the regulations were rather detailed, such as the sections on ventilation. The code stipulated that every person working in the mine had to receive at least 150 cubic feet of air per minute. As far as animals such as horses and mules were concerned, they had to have at least 600 cubic feet per minute. Other regulations included the construction of standard size escapement shafts, the freeing of all passageways, shafts, rooms and entries from obstructions, including water, the proper handling and storing of explosive materials, and an outline of the duties and responsibilities of each miner, machine operator, motorman, driver and any other employee in order to free his working area from danger. Another requirement was sufficient lighting in and around the mine area. For emergency purposes, the operator of every mine was required to have a store of medical supplies readily available.<sup>51</sup>

The North Dakota Coal Mining Code was truly progressive in two aspects, that of maximum hours of labor and the employment of children. When numerous other industries throughout the nation were setting minimum daily working hours at ten or above, the North Dakota code set the maximum hours for coal miners at eight, except in emergency situations in which life or property was in imminent danger.<sup>52</sup> The state

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<sup>51</sup>Laws Sixteenth Session, 1919, pp. 295-297, 300, 302-307.

<sup>52</sup>Ibid., p. 311.

mining code also limited the use of child labor, and in the year 1919, the employment of children and often very young children for excessive hours, was a well known fact in this country.<sup>53</sup> Section eighty-six of the code declared that:

Any person, company, firm . . . engaged in the mining industry in this state . . . who shall knowingly employ or permit to be employed any child under the age of sixteen years to render or perform any service or labor in any underground workings or mine, shall be guilty of a misdemeanor and . . . punishable by a fine of not less than One Hundred (\$100.00) Dollars or more than Five Hundred (\$500.00) Dollars.<sup>54</sup>

The coal mining code was a relatively uncomplicated solution to the problem of poor mining conditions, but when the state's legislators met the freight rate controversy, they encountered, as they had in previous years, a perplexing maze of problems that refused any solution, let alone an uncomplicated one. In 1903 the legislature made the first effort to adjust the rates since the great debate of 1897 (see chapter II, page 50). Under Chapter 146 of the Laws of 1903, the legislature established a maximum coal rate much lower for long distance hauls than the schedule set in 1897. Furthermore, the legislature approved joint rates, which meant that if freight was shipped over two or more connecting lines the rate could not be higher than if the freight traveled the same distance over one line. With the new schedule and joint rates, communities

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<sup>53</sup>National Industrial Conference Board, *The Employment of Young Persons in the United States*, (New York: National Industrial Conference Board, 1925), pp. 23, 28; See also Raymond G. Fuller, *The Meaning of Child Labor*, (Chicago: A. C. McClurg & Co., 1922), pp. 37-41

<sup>54</sup>Laws Sixteenth Session, 1919, p. 311.

TABLE 7

MAXIMUM RATES UNDER CHAPTER 146, LAWS OF NORTH DAKOTA  
EFFECTIVE MARCH 10, 1903

Miles	Rate (per ton)
0-5	\$ .30
5-15	.40
15-25	.50
25-40	.60
40-60	.70
60-100	.75
100-150	.80
150-200	.90
200-250	1.00
250-300	1.10
300-350	1.20
350-400	1.25
400-450	1.30
450-500	1.35

SOURCE: Laws Passed at the Eighth Session of the Legislative Assembly of the State of North Dakota, 1903, (Grand Forks: Herald, State Printers and Binders, 1903), p. 197.

in the eastern part of the state received coal at a much lower price. Residents in Grand Forks saved \$.92 per ton on lignite from Kenmare with the new rates.<sup>55</sup>

The major railroads in the state, however, declared the new rates unreasonable and confiscatory and they refused to comply with them.<sup>56</sup> Several investigations and meetings followed with results indicating that the Chapter 146 rates, in comparison to those in other mid-western states, were markedly lower, particularly those rates for

<sup>55</sup>Laws Passed at the Eighty Session of the Legislative Assembly of the State of North Dakota, 1903, (Grand Forks: Herald, State Printers and Binders, 1903), pp. 194, 197.

<sup>56</sup>Fourteenth Annual Report of the Board of Railroad Commissioners to the Governor of North Dakota for the Year Ending November 1, 1903, (Bismarck: Tribune, State Printers and Binders, 1904), pp. xvi, xvii.

distances over sixty miles. The Board of Railroad Commissioners met with Governor John Burke and together they agreed that no legal action be taken to enforce the unreasonable rates. In their annual report for 1904, the railroad commissioners urged a repeal of Chapter 146.<sup>57</sup> The Senate concurred with the commissioners and passed a resolution against the enforcement of the rate schedule during the 1905 Legislative Session.<sup>58</sup>

In 1907 the legislature attempted once again to enact a maximum tariff under Chapter 52, Laws of North Dakota. The railroads in turn revived the old charges of unreasonableness and confiscation and therefore refused to institute them. In August, 1907, the Attorney General applied to the North Dakota Supreme Court for an injunction to restrain the shippers from charging the higher rates. They, in turn, pointed out their reasons for not applying the rate schedule under Chapter 51. Eventually, the case went before the North Dakota Supreme Court and on April 16, 1909, the court decided that:

. . . the law was presumptively valid and the burden proving that the rates prescribed were clearly unreasonable, was upon the carriers; and that the proper test as to whether the rates were reasonable, was whether the carrier would be enabled from its total freight receipts on all its intrastate traffic to earn a sum, above operating expenses reasonably necessary for such traffic, sufficient to yield a fair and reasonable profit on its investment--that the legislature might reduce the freight on a particular article, provided the carrier was enabled to earn a fair profit upon its entire intrastate business.<sup>59</sup>

<sup>57</sup>Fifteenth Annual Report of the Board of Railroad Commissioners to the Governor of North Dakota for the Year Ending November 1, 1904, (Bismarck: Tribune, State Printers and Binders, 1904, pp. viii, xii-xiii.

<sup>58</sup>Sixteenth Annual Report of the Board of Railroad Commissioners to the Governor of North Dakota for the Year Ending November 1, 1905, (Bismarck: Tribune, State Printers and Binders, 1906), pp. 7-8.

<sup>59</sup>Twenty-First and Twenty-Second Annual Reports of the Board of Railroad Commissioners to the Governor of North Dakota for the Biennial Period Ending November 30, 1912, (Bismarck: Tribune, State Printers and Binders, 1912), pp. 65-66; Laws Tenth Session, 1907, pp. 73-77.



The railroads could not agree with the state court's decision and appealed their case to the United States Supreme Court. The federal judgement, however, was quite inconclusive for it did not ". . . settle any question of fact." Yet, the high court did concur with the state court's decision to re-hear the case if the shippers could ". . . prove more clearly the confiscatory character of the rates."<sup>60</sup> Accordingly, the railroads applied the rates under Chapter 51 for a trial period ending June 30, 1911. Two months later, the case was heard by the North Dakota Supreme Court. The state tribunal, after extensive investigations, found that the Great Northern Railway Company had made a reasonable profit from its lignite shipments. The Northern Pacific Railway Company, on the other hand, had made only a marginal profit from its lignite traffic, and the court ruled the rates as non-compensatory. The Minneapolis, St. Paul and Sault Ste. Marie Railway Company (Soo Railroad), had suffered a net loss of from \$9,000 to \$12,000 during the trial period, and the rates were again declared non-compensatory. Nevertheless, the state court ruled that even though the rates were not compensatory for the Northern Pacific and the Soo Railroads, the revenue from other commodities shipped over those lines, provided a reasonable profit and in consequence, the rate schedule under Chapter 51 was upheld.<sup>61</sup>

The Northern Pacific and Soo Railways were not content with the state court's ruling and reappealed their case to the United States Supreme Court. On March 8, 1915, the court reversed the state court's

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<sup>60</sup>Railroad Commissioners' Report, 1912, p. 66.

<sup>61</sup>Twenty-Fifth and Twenty-Sixth Annual Reports of the Board of Railroad Commissioners to the Governor of North Dakota for the Biennial Period Ending June 30, 1916, (Fargo: Walker Bros. & Hardy, State Printers, 1916), pp. 44-45.

decision. The coal rate law of 1907 was declared unconstitutional because it did not provide for a reasonable profit from the lignite traffic. The court further ruled that ". . . each commodity must stand upon its own bottom, and a carrier may not be compelled to transport any commodity at less than cost, or without substantial compensation in addition to cost."<sup>62</sup>

Shortly after the Supreme Court's decision, the two railroads filed tariffs with the Board of Commissioners which restored the schedule in effect prior to the passage of the 1907 statute. During subsequent conferences with the aid of rate experts, the commissioners discovered, however, that the old rates were significantly higher on coal carried over two or more connecting lines than on the joint rate schedule under Chapter 51. The board also concluded that the railroads lost the majority of their earnings on the longer hauls. Therefore, the board enacted a schedule which increased the rates on long hauls and implemented the joint rate clause. The coal operators protested the new schedule on the basis that it ". . . would operate to confine each mine to its immediate locality in the sale and distribution of its product and would not permit free competition at points which should be competitive."<sup>63</sup>

The commissioners together with the rate experts and the legislature decided to establish a new coal tariff without the joint rate clause.

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<sup>62</sup>Ibid., pp. 45-46.

<sup>63</sup>Railroad Commissioners' Report, 1916, pp. 46, 49, 60.

TABLE 8

MAXIMUM RATES FOR THE CARRIAGE OF LIGNITE COAL  
EFFECTIVE SEPTEMBER 4, 1915

Miles	Rate Per Ton Cents	Miles	Rate Per Ton Cents	Miles	Rate Per Ton Cents	Miles	Rate Per Ton Cents
10	40	85	74	160	92	270	114
15	42	90	76	165	93	280	116
20	45	95	78	170	94	290	118
25	47	100	80	175	95	300	120
30	50	105	81	180	96	310	122
35	52	110	82	185	97	320	124
40	55	115	83	190	98	330	126
45	57	120	84	195	99	340	128
50	60	125	85	200	100	350	130
55	62	130	86	210	102	360	132
60	64	135	87	220	104	370	134
65	66	140	88	230	106	380	136
70	68	145	89	240	108	390	138
75	70	150	90	250	110	400	140
80	72	155	91	260	112		

SOURCE: Twenty-Fifth and Twenty-Sixth Annual Reports of the Board of Railroad Commissioners to the Governor for the Biennial Period Ending June 30, 1916, (Fargo: Walker Bros. & Hardy, State Printers, 1916), p. 61.

As an alternative, the board sanctioned a combined or joint rate as eighty percent of the through rate (i.e., 1 line haul--100 miles=\$.80 per ton or 2 line haul--50 + 50 miles at \$.60 each=\$1.20 x .80=\$.96).<sup>64</sup>

<sup>64</sup>Railroad Commissioners' Report, 1916, pp. 60-61.

The new freight rate schedule was enforced by the commission; the first one to be carried out since 1907. Surprisingly, the rates established in September of 1915 by the commissioners, the rate experts, and the legislature were satisfactory to all of the interested parties--the railroads, the coal operators and the people.<sup>65</sup>

Another controversial issue erupted in November of 1919. During that month and in those that followed, soft coal miners throughout the United States went out on strike. North Dakota lignite miners were no exception, but their participation in this chapter of labor history was markedly different from that of the rest of the nation. Miners in North Dakota were not highly organized in 1919. The fact that coal mines were usually located "out on the bare prairies" and scattered throughout the western part of the state, ". . . made it quite difficult to organize and maintain unions."<sup>66</sup> Still there were several unions in existence by the time of the strike. North Dakota locals under District No. 27 of the United Mine Workers of America were located in Lehigh, Burlington, Kenmare, Williston, Wilton, Beulah, Medora, New Salem and Noonan.<sup>67</sup>

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<sup>65</sup>Richard G. Heinert, "The North Dakota Board of Railroad Commissioners, 1889-1916," (M.A. thesis, University of North Dakota, 1974), p. 169. In succeeding years the rate charged for hauling lignite was increased, but the escalation was due to an inflated economy, general complaints of discrimination, and not by reason of controversial issues involving the right or power to enact rate schedules. See Twenty-Seventh and Twenty-Eighth Annual Reports of the Board of Railroad Commissioners to the Governor of North Dakota for the Biennial Period Ending June 30, 1918, (Bismarck: Bismarck Tribune Company, State Printers and Binders, 1918), pp. 10-12.

<sup>66</sup>Henry R. Martinson, History of North Dakota Labor, (n.p., 1970), p. 56.

<sup>67</sup>William Hurtado, President of District 15, United Mine Workers of America, 1516 Xavier Street, Denver, Colorado, personal communication, 2 September 1977.

Approximately 1500 miners belonged to the union and produced almost seventy percent of the state's annual lignite output.<sup>68</sup> Therefore, if the miners refused to work, a fuel shortage would be imminent.

The coal strike of 1919 was the outcome of unpleasant economic conditions. As part of the World War I effort, the soft coal miners in the country signed a contract, known as the Washington Agreement, on October 6, 1917, which froze wages for the duration of the war, or until March 31, 1920. The economy, however, refused to remain constant. In November of 1918, the average work week was about forty hours, but as the war drew to a close, the demand for coal declined at an accelerating rate. By the winter of 1919, miners were working only twenty-four hours a week.<sup>69</sup> Their earnings diminished and the cost of living rose skyward.

In an attempt to alter the situation, the United Mine Workers met for their biennial convention in September, 1919. The wage scale committee adopted a slate of demands consisting of a sixty percent increase in pay, a six hour day and five day week, time and a half overtime and double time on Sundays and holidays, and an end to the double shift system.<sup>70</sup> The UMW then met with the Bituminous Coal Operators Association and presented their slate. The operators association refused to accept the demands, claiming that they would cause a 153

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<sup>68</sup>"1500 Miners Would Go Out November 1 Under Original Order of United Mine Workers," Bismarck Tribune, 28 October 1919, p. 1.

<sup>69</sup>U.S., Department of Labor, Bureau of Labor Statistics, Monthly Labor Review, "The Bituminous Coal Strike," by C. F. Stoddard, 9(December 1919): 61, 65.

<sup>70</sup>"Where Coal Strike Threatens," Bismarck Tribune, 20 October 1919, p. 6.

percent increase in total wages, that the production level would be cut in half, and that the consumer would be forced to pay twice as much for the fuel. Furthermore, the operators declared that the war was not over as peace had not been formally established and therefore the contract was still binding.<sup>71</sup>

Additional negotiations only demonstrated the lack of compromise, and finally the UMW issued a strike call for November 1. At midnight on October 31 the strike began and 394,000 unionized soft coal miners left their jobs the first day.<sup>72</sup> The coal miners in North Dakota, however, remained on the job as a result of the actions of Lynn J. Frazier, Governor of North Dakota, and Henry Drennan, UMW District 27 President. Governor Frazier sent a telegram to John L. Lewis, President of the UMW on October 30 proposing that the state's mines be kept open because lignite was not and could not be stockpiled by reason of its rapid deterioration and a dangerous fuel shortage would result. Lewis wired Drennan, who in turn conferred with the Governor and other state officials.<sup>73</sup> A final agreement was reached "after considerable Parleying;"<sup>74</sup> the miners would return to work during the strike, the operators were to pay a sixty percent increase in wages which would be collected as a union assessment and sent to miners in Montana in order to finance their strike, no coal was to be shipped out of the state, and when a final

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<sup>71</sup>Ibid.

<sup>72</sup>"The Coal Miners' Strike," The New York Times Current History 11(December 1919): 420, 424.

<sup>73</sup>"North Dakota Solves Its Coal Problem," The Nonpartisan Leader, 24 November 1919, p. 3.

<sup>74</sup>"Special Convention of the District No. 27, UMW of A., Billings, Montana, February 2, 1920," p. 9, [located in the files of the District 15 Office of the United Mine Workers of America, 1516 Xavier Street, Denver, Colorado].

settlement was made, the same contract would apply to North Dakota miners.<sup>75</sup> Shortly before midnight Drennan issued a statement delaying the strike.<sup>76</sup>

The miners picked up their tools and went to work November 1 on schedule. As far as they were concerned, they had, in fact, asked for an increase in wages, but they were satisfied with the eight hour day established by the North Dakota Legislature only a few months earlier and they were also content with the six day week.<sup>77</sup> The operators, on the other hand, refused to accept the Frazier-Drennan proposal and stated that the demands were excessive. They maintained that using the wage increase to aid striking miners violated a federal injunction, the increase would only raise the price of coal, and a wage scale had not yet been adopted by the national organization. Therefore, the operators contended, the salary increase was not obligatory.<sup>78</sup> Continued negotiations proved futile and finally, on November 7, Drennan delivered a strike order. The next morning the miners walked out.<sup>79</sup>

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<sup>75</sup>Ibid.

<sup>76</sup>"North Dakota Will Get Its Fuel Supply," The Nonpartisan Leader, 17 November, 1919, p. 3; One small group of miners in Burlington did not receive Drennan's message in time and went out on strike. Once they received the cancellation order, they returned to work.

<sup>77</sup>Ibid.

<sup>78</sup>"Drennan Delivers Ultimatum to Coal Operators But Grants More Time to Permit Second Pow-Wow," Bismarck Tribune, 5 November, 1919, pp. 1,3.

<sup>79</sup>"North Dakota Wakes in Blizzard to Find Mining at Standstill in All Mines Controlled by Unions," Bismarck Tribune, 8 November, 1919, p. 1.

Governor Frazier, after several unsuccessful conferences with operators, miners and state officials, decided to institute martial law and took over the mines on November 12. His proclamation contained the following provisions:

- 1) The lignite mines were to be reopened at once under the supervision of the state militia.
- 2) The people of the state were to be supplied with coal immediately.
- 3) Any persons interfering with the mining operation or transportation of coal were to be placed under guard until they were considered as not dangerous to the public welfare.<sup>80</sup>

The Governor also proposed to pay the operators a royalty of ten to twenty-five cents per ton, that the miners were to receive the existing wage scale, and that lignite was to be sold to the public at cost. The miners accepted Governor Frazier's proposal and returned to work under the direction of the state militia.<sup>81</sup> The number of mines placed under the control of the state was thirty-four, and they were located in Burlington, Kenmare, Tasker, Foxholm, Bowbells, Noonan, Williston, Medora, Wilton, Avoca and Zahl (see appendix D for the names of the mines).<sup>82</sup>

The operators of the Washburn Lignite Coal Company, however, protested the Governor's actions and refused to work for the state. The officers of the firm petitioned District Judge W. L. Nuessle for ". . .

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<sup>80</sup>"North Dakota Not Mining Coal Today: Wilton Men Balk at Walking," Bismarck Tribune, 13 November, 1919, p. 4.

<sup>81</sup>"Special Convention of the District No. 27, UMW," pp. 9-10.

<sup>82</sup>"North Dakota Not Mining Coal Today," Bismarck Tribune, p. 4.



an injunction directing the governor [sic] to hand the Wilton mines back to the operators the following week."<sup>83</sup> The court heard testimony from both parties. The attorney for the state argued that state law protected militiamen in the performance of their official duties and as subordinates of the Governor their actions could not be questioned. The Washburn officials, on the other hand, stated that there had been no breach of the peace and furthermore, ". . . had he [Governor Frazier] been warranted in declaring martial law for his seizure of private property, there was no warrant in law for his seizure of private property for commercial purposes." On November 19, Judge Nuessle ordered Adjutant General Angus Fraser to return the Wilton mines to their legal owners by November 24.<sup>84</sup>

Meanwhile, the owners of the Dakota Coal Mining Company of Tasker alleged that their mine was in operation when it was placed under state control. They started proceedings in the Federal District Court at Fargo for the return of their property. On November 24, the case was heard and the allegation of the mining company was sustained, although it was determined that the mine was not operated to capacity prior to the seizure. According to Federal District Judge Charles F. Amidon, the presiding justice, the central issue of the case was not the operating abilities of the Dakota Coal Mining Co., but ". . . whether or not all the people of the state could have secured coal and not been in danger of suffering and freezing to death if the Governor had not seized the

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<sup>83</sup>"N.D. Fuel Mines Producing 100 Per Cent," The Nonpartisan Leader, 8 December, 1919, p. 3.

<sup>84</sup>"Admits Order May Cause Civil War; Think That Better Than Depotism," Bismarck Tribune, 19 November, 1919, pp. 1, 3.

<sup>85</sup>"N.D. Mines Producing 100 Per Cent," The Nonpartisan Leader, p. 3.

lignite mines."<sup>85</sup> Judge Amidon further declared that "there are three great rights in every strike. . . the right of the employer, the employee, and the public. . . the right of the public supercedes that of either employer or employee" With that conclusion, Judge Amidon handed down a decision in support of the Governor's action.<sup>86</sup>

Governor Frazier's victory in the federal court was somewhat tarnished when a few days later the lignite operators accepted a temporary agreement with the UMW. On December 3 officers from District 27 of the union met with James Murphy, President of Local No. 3598 of Burlington and officials from the North Dakota Lignite Operators Association and together they agreed to a fourteen percent increase in the wage scale as a temporary contract for settlement until a final agreement was reached by the national organization.<sup>87</sup> Gradually, the other mines settled on the fourteen percent increase. The state militia was recalled from the mines, thus ending martial law, and by December 23, the miners were back at work under private management.<sup>88</sup>

On the national scene, a final agreement was not reached until March, 1920. Shortly after the settlement in North Dakota, President Woodrow Wilson asked members of the United States Bituminous Coal Commission to schedule hearings on the issues of the strike. Their objective was to review the problems, to reach an acceptable decision, particularly on the wage scale, and to submit their report to the President by March 10. In the report, the commissioners granted a twenty-seven

<sup>85</sup>"N.D. Mines Producing 100 Per Cent," The Nonpartisan Leader, p. 3.

<sup>86</sup>"Amidon Upholds Frazier's Acts in Coal Strike," Bismarck Tribune, 26 November, 1919, p. 1.

<sup>87</sup>"Special Convention of the District No. 27, UMW," p. 10

<sup>88</sup>"Martial Law's Reign in State Virtually Ends," Bismarck Tribune, 23 December, 1919, p. 1.

percent wage increase to the miners and as far as the eight hour day and six day week were concerned, the commissioners suggested that they remain as such.<sup>89</sup> President Wilson approved the report and sent it to the wage scale committees of the Bituminous Coal Operators Association and the UMW on March 29 for acceptance. The association and the union agreed to the conditions of the commission report, and the new contract went into effect on April 1.<sup>90</sup> The strike was over.

While lignite coal was the subject of controversy ranging from the prolonged freight rate battles to the episodes of the labor strike, it also served as the basis of a chemistry instructor's research at the University of North Dakota in Grand Forks. Earle J. Babcock,<sup>91</sup> often referred to as the "Dean of North Dakota Lignite," conducted countless

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<sup>89</sup>U.S., Department of Labor, Bureau of Labor Statistics, Monthly Labor Review, "Report of the United States Coal Commission," 10(April 1920): 41-47; For further information on the coal strike of 1919, see Ann H. Sande, "The Coal Strike of 1919 in North Dakota," Seminar 511 paper, University of North Dakota, 1976, [located in the holdings of the North Dakota Room, Chester Fritz Library, Grand Forks, North Dakota].

<sup>90</sup>"Scale Becomes Effective Now," Grand Forks Herald, 30 March 1920, p. 1.

<sup>91</sup>Earle Jay Babcock accepted a faculty position at the University of North Dakota in 1889. In 1897 he became the State Geologist for North Dakota. In the following year he became a professor of Industrial Chemistry and was named Dean of the College of Mining and Engineering. Babcock was a member of the American Institute of Mining Engineers, the Society for Promotion of Engineering and Education and the American Chemical Society. Babcock's long years of research into North Dakota resources led him into international fame, and as a teacher at the University, he was greatly admired by both the students and the faculty. Much of Babcock's early field work in the western part of the state was carried on during the summer months, and he donated his time and money freely "for the good of the cause." For more information see "Services for Dean Babcock Here Saturday," Grand Forks Herald, 4 September, 1925, p. 1-2; William O. Beck, "Earle J. Babcock and North Dakota Lignite," North Dakota History, 41(Winter 1974): pp. 4-15.

experiments which eventually led to the briquetting and gasification of lignite coal. The red-haired professor began his investigations of the brown coal long before the turn of the century. He traveled throughout the coal region, describing the stratification of select mines and analyzing the nature of their fuel content. Babcock's enthusiasm and desire to promote the coal resources was acknowledged by the state legislature in 1908 when the lawmakers appropriated \$30,000 for the construction of an experimental lignite station at Hebron, North Dakota and for a lignite laboratory at the University's School of Mines.<sup>92</sup> By 1911 the Dean was devoting the majority of his time to coal research.

One of Babcock's numerous accomplishments was the briquetting of lignite. Early, he saw the need and the advantage of producing briquets. Lignite was used extensively for domestic purposes and was generally supplied in large lumps that often slacked or pulverized. Coal at the mine head contained about thirty percent water, which reduced its heating efficiency. Briquets, on the other hand, were quite advantageous. As Babcock explained:

The briquets present many advantages over the original lignite or even over the other varieties of coal. They have nearly double the heating value of the original lignite, as usually placed upon the market, they do not disintegrate on standing or burning, can be stored without being affected by atmospheric conditions, and are uniform in size and convenient to handle.<sup>93</sup>

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<sup>92</sup>Louis Geiger, University of the Northern Plains, (Grand Forks: University of North Dakota Press, 1958), pp. 155; Laws Passed at the Eleventh Session of the Legislative Assembly of the State of North Dakota, 1909, (Bismarck: Tribune, State Printers and Binders, 1909), pp. 29-30.

<sup>93</sup>Earle J. Babcock, "The Economic Utilization of Lignite Coal," The Quarterly Journal of the University of North Dakota 1(April 1911): 204-205.

With the need and the advantage, the only remaining factor was feasibility. At the Hebron Mining Substation, Dean Babcock built a briquetting plant. There, innumerable tests were carried on and a process for briquetting was developed:

In converting the raw lignite into the condensed briquets, the first step is . . . the removal . . . of water. The lignite is run thru a rotary drier which removes from 75 to 90 percent of the moisture.

After the coal has been sufficiently dried it is conveyed to the retort distillation chamber and the gas driven off. . . This process is usually completed in about four hours. At the end of this time the retort is discharged and the remaining coal residue quenched and crushed ready for the mixing with the binder [a mixture of pitch, flour, starch and gypsum]. The coal and the binder are then warmed to the proper temperature and conveyed to the mixer where a very thro [sic] blending of coal residue and binder takes place.

When the mixing has been carried on for a sufficient length of time the material is discharged and conveyed directly to the briquet machine.

The material to be briquetted is fed between two rolls, the surfaces of which are covered with pillow shaped pockets, half of a pocket being on the under and half on the upper roll. The coal mixture is fed between the two rolls and pressed into the pockets, by which process firm dense briquets are made and as the rolls revolve the briquets are discharged to a belt conveyer by which they are carried to the storage bins and the briquetting process thus completed.<sup>94</sup>

The briquetting machine was capable of producing two tons of briquets per hour, with each briquet weighing about two and one-half ounces.

Babcock also studied the heating power and the chemical composition of the briquets. He compared them to raw lignite and also to hard anthracite coal, and concluded in favor of the briquets. The results of one experiment undertaken in 1911 are in Table 9.

Another research project of Dean Babcock's was the gasification of lignite, for the brown coal contained numerous gases. Both the Mining

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<sup>94</sup>Babcock, "The Utilization of Coal," pp. 205-206.

<sup>95</sup>Ibid., p. 206.

TABLE 9  
CHEMICAL ANALYSES AND CALORIFIC COUNT

	Moisture	Volatile Matter	Fixed Carbon	Ash	B.T.U.s
Raw Lignite	35.01%	25.11%	34.67%	5.21%	7,500
Lignite Briquets	0 to 6%	2 to 8%	75 to 85%	10 to 14%	11,500-12,000
Anthracite Coal	3.68%	5.26%	80..51%	10.55%	12,000-13,000

SOURCE: Earle J. Babcock, "The Economic Utilization of Lignite Coal," The Quarterly Journal of the University of North Dakota 1(April 1911): 201-202.

Substation and the School of Mines Laboratory housed gasification plants. At those two locations, Babcock conducted research into the quantity and quality of the gases distilled from lignite. In the gasification process, 300 to 400 pounds of dried lignite were crushed and placed inside a retort. The retort was then heated to a temperature of between 1200 and 1400 degrees Fahrenheit and the gas was driven off. In order to purify the gas of any residues such as tar, pitch, ammonia, coke and dust, it was sent through four filtering chambers including a tar extractor, a condenser, a scrubber, and a purifier. Once the gas had passed through these purification receptacles, it was sent to a storage tank where it was analyzed for its practicality and efficiency as a domestic fuel gas.<sup>96</sup> The results of an experiment conducted in 1911 are shown in Table 10.

With this analysis and numerous other tests, the Dean came to believe that lignite gas could be used efficiently for lighting purposes, as a power source in gas engines, and for the production of

<sup>96</sup>Babcock, "The Utilization of Coal," pp. 200-201.

TABLE 10

## GAS AND RESIDUE ANALYSIS

Sample Series	A	B	C
Carbon Monoxide	17.24%	18.70%	19.24%
Hydrogen	45.16	45.45	41.26
Ethane	0.14	1.02	0.39
Methane	15.59	14.42	16.31
Nitrogen	5.49	5.34	4.30
Oxygen	1.76	1.21	1.00
Carbon Dioxide	11.51	11.51	15.40
Tar (per ton)	20-30 lbs.		
Ammonia Sulphate (per ton)	14.5-15 lbs.		

SOURCE: Earle J. Babcock, "The Economic Utilization of Lignite Coal," The Quarterly Journal of the University of North Dakota 1(April 1911): 200-201.

electricity. The residue ammonia sulphate would have a definite commercial value as a fertilizer. Tar, Babcock discovered, would provide a more than adequate binder in the briquetting process.<sup>97</sup>

Babcock's demonstration of the feasibility of briquetting and his gasifying of lignite attracted the attention of outside interests. In 1913, lignite in the briquet form was tested as a marketable commodity and was proven to be successful. The Northern Briquetting Company established the first commercial briquetting plant in the state at Minot. The three-story processing plant was constructed at a cost of \$150,000. The lignite used in the operation was shipped from the Davis Coal Mine, which was sold to the briquetting company. The plant was operated by five men and had a capacity of 100 tons of briquets per day.

<sup>97</sup>U.S., Department of Interior, Bureau of Mines, Economic Methods of Utilizing Western Lignites, by Earle J. Babcock, Bulletin 89, (Washington, D.C.: Government Printing Office, 1915), pp. 46-48.

Another briquetting plant was constructed at the Scranton Coal Mine near the town of Scranton (see page 63).<sup>98</sup>

With the successful operation of the Northern Briquetting Company, Babcock envisioned a bright future for the brown coal. In 1914 he stated optimistically:

There seems little doubt but that the briquetting and the production of gas from lignite will in the near future be put on a commercially satisfactory basis in the state. While this will prove of great value to all parts of our state, it will be especially important to those communities nearest the great lignite deposits in the western portion of the state, for in some of these the wastes can be converted into electricity which in turn can be sent to surrounding towns and villages, thus distributing power and light from numerous central power plants. Such an arrangement will not only be a great saving of our fuel resources but will also result in establishing many industries which can be developed by abundant and cheap electric power.<sup>99</sup>

The red-haired Professor's extensive research, published works, and endless concern were a personification of the 1900-1920 era. The first score years of the twentieth century were a busy time for the coal industry. The rise of the coal towns indicated that lignite was becoming big business. Its use in irrigation projects, in producing electricity and in firing the kilns in brick plants marked a widening horizon in its technological capabilities. In the laboratory, the chemical reduction of lignite into a countless number of by-products spelled the beginning of a promising future for those by-products in various other industries.

The era was a progressive one as well. The state government took influential steps in the licensing of coal mine operators who then

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<sup>98</sup>W. C. Gilbreath, "Ward County," North Dakota Year Book, 1913, (Bismarck: Department of Agriculture, 1913), p. 243.

<sup>99</sup>Earle J. Babcock, "The Coal and Clay Resources of North Dakota," The quarterly Journal of the University of North Dakota 5(October 1914): 54.



had to acquire a permit from a state department in order to run their mines. The creation of the State Coal Mine Inspector was a necessity, and the inspector's duties and rights empowered him with a regulating influence over the mining industry. A liberal legislature also established a coal mining code for the state which was progressive in the areas of safe mining conditions, child labor and daily working hours.

Somewhat problematical is another aspect of the 1900-1920 period. Shipping lignite was an old dilemma with new, unanswered questions. In 1916, after long years of controversy, part of the puzzle was mastered by the United States Supreme Court when it limited the power of the state in rate making. The court's decision provided for a balance of power between the opposing factions and enhanced the possibility of compromise. Miners out on strike were another problem during the early winter months of 1919. Labor was not highly organized at that time, but its growing force was felt by those without fuel in the eastern part of the state. The immediate institution of martial law by the Governor was a demonstration of the state's power and the early acceptance of a new contract was another example of the supremacy of compromise. The 1900-1920 era can indeed be characterized as significant in the history of North Dakota coal mining.

## CHAPTER IV

### CHANGING TIMES 1920-1941

#### Steam Shovels, F.E.R.A. and Rival Fuels

In almost any industry, there are times of great change, when single events multiply to transform it. For the state's lignite industry, the period of change began in 1920. During the twenties, the rise in the number of strip or surface mining operations revolutionized the industry. The object ultimately responsible for this revolution was the steam shovel. Within a few short years, strip mines outproduced underground structures. They were economically more profitable than underground mines in terms of coal recovery, employment and safety. The operators of the strip mines soon became the new captain's of the coal industry. During the 1900-1920 period General William D. Washburn commanded the field. In 1920 two brothers emerged to take his place. A. H. (Harold) and Elmer M. Truax created one of the largest surface mining enterprises in the history of coal development. Baykol-Noonan Lignite, Inc., Stevens Brothers' Coal Company and Zap Colliery followed the Truax brothers and sustained extremely high outputs of strip mined coal. Although underground mining suffered a decline in popularity, it still claimed one excessively large operation, the Knife River Coal Mining Company.

If the decade of the 1920's was one of profitable changes, the years of the Great Depression were not. The economic conditions of

the thirties did not seriously damage the coal industry. However, production levels fell periodically from 1930 to 1938 with the most severe decrease in 1931. The price of lignite also declined throughout the 1930's and never recovered from the downward cycle. Meanwhile the federal government aided those associated with the coal industry, particularly those in the research field. The state agencies dealt very little with coal during the depression; and the projects and programs instituted on the community level heated the homes of many neighbors and friends.

As the industry emerged from the Great Depression, another change developed which inaugurated the modern era in coal development. Symptoms of this keynote change appeared quite early, for in the April 12, 1923 issue of Coal Age, the industry's future industrial capabilities were confidently outlined.

Vigorous propaganda is being instituted on behalf of the lignite industry of North Dakota, with frequent publicity in which that fuel is credited with possibilities for an industrial development of the Northwest the like of which Pittsburgh never dreamed. Visions are portrayed of the removal of the steel center to the Twin Cities; of developing immense power plants at the scene of the mines, and transmitting power electrically to the Twin Cities . . . .<sup>1</sup>

During this period North Dakota did not, of course, replace Pittsburgh as a great industrial center, but the trend toward using lignite in the production of electrical power began and by 1941 the trend had become lignite's future. The rival fuels, natural gas and fuel oil, had made serious inroads into the lignite consumption market by 1941. As a consequence, the number of active mines began to decrease and the lignite industry entered a new industrial era.

The most important development during the decade of the 1920's was the rise in strip mining operations. North Dakota proved to be

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<sup>1</sup>"North Dakota," Coal Age 23(April 12, 1923): 622.

an excellent state for that type of mining. It had a comparatively flat surface with thick, level coal beds. The region held an advantageous ratio of overburden to coal. Moreover, the anatomy of the overburden consisted of soft clays and glacial drift, an overburden more yielding than that of the eastern bituminous coal fields.<sup>2</sup> Taken together, these factors produced an optimum condition for the development of strip mine activity.

Strip mining began long before the turn of the century (see chapter II, pp. 43-46), but the mines opened were small operations and in some cases were mere open pits. The horse-drawn scraper was used to remove the overburden. The coal was then extracted manually with the aid of picks, shovels and dynamite. The horse and scraper, however, were not capable of removing huge tracts of overburden, and consequently this early type of strip mining was limited in its output. Surface mining on a commercial scale was not achieved until the horse-drawn scraper was replaced with a mechanical shovel capable of removing the overburden in cubic yards instead of in square feet. With that technological change, a new era in lignite mining was ushered in.

The steam shovel made strip mining a lucrative enterprise, and eventually it became more profitable than underground mining. In 1920 there were only twelve strip mines as opposed to 104 underground (see table 11). By the end of the decade strip mines had risen to sixty-nine and in 1939 surface operations surpassed the underground total. Although it took the strip mine nineteen years to overcome the traditional subterranean mine, its profitability was well demonstrated by 1929. In that year there were only sixty-nine strip mines or one-third of the total

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<sup>2</sup>L. P. Dove, "Strip Process Brings Big Increase in Mining Output," Minot Daily News, 20 October, 1927, p. 14.

TABLE 11  
ACTIVE LIGNITE MINES IN NORTH DAKOTA, 1920-1939

Year	Total Number of Mines	Total Production (tons)	Number of Underground Mines	Production (tons)	Number of Strip Mines	Production (tons)
1920	116	878,969	104	791,281	12	87,688
1921	127	895,715	104	786,511	23	109,204
1922	108	1,057,823	figures	missing	figures	missing
1923	171	1,435,605	127	1,092,726	44	342,879
1924	135	1,029,449	figures	missing	figures	missing
1925	211	1,357,408	150	815,229	61	542,179
1926	272	1,385,362	183	837,964	89	547,398
1927	249	1,529,154	165	882,079	84	647,075
1928	226	1,783,624	157	943,604	69	840,020
1929	217	1,909,303	148	1,023,832	69	885,471
1930	248	1,849,144	174	924,693	74	924,451
1931	293	1,552,242	193	644,379	100	907,863
1932	279	1,743,053	185	766,738	94	976,315
1933	218	1,872,381	141	762,674	77	1,109,707
1934	268	1,746,226	167	650,485	101	1,095,741
1935	286	1,828,213	170	763,747	116	1,064,466
1936	294	1,704,983	155	681,964	139	1,023,019
1937	290	2,184,927	151	871,828	139	1,313,099
1938	299	2,142,061	151	797,159	148	1,344,902
1939	306	2,176,841	137	787,511	169	1,389,330

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SOURCE: Second Annual Report of the State Mine Inspector to the Governor of North Dakota for the Period Ending October 31, 1920, (Bismarck: Tribune, State Printers, 1920), pp. 7-23; Third Annual Report of the State Mine Inspector for the Period Ending October 31, 1921, (n.p., n.d.), pp. 6-29; Fourth Annual Report of the State Mine Inspection Department, October 31, 1921 to October 31, 1922, (n.p., n.d.); Fifth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1923, (n.p., 1923), pp. 5-18; Sixth Annual Report of the North Dakota State Mine Inspection Department, October 31, 1923 to

October 31, 1924, (n.p., n.d.); Seventh Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1925, (n.p., 1925), pp. 5-18; Eighth Annual Report of the Coal Mine Inspection Department for the State of North Dakota, 1926, (n.p., 1926), pp. 5-62; Ninth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1927, (n.p., 1927), pp. 11-25; Tenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1928, pp. 17-31; Eleventh Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1929, (n.p., 1929), pp. 7-21; Twelfth Annual Report of the Coal Mine Inspection Department, 1930, (n.p., 1930), pp. 7-21; Thirteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1931, (n.p., 1931), pp. 7-23; Fourteenth Annual Report of the Coal Mine Inspection Department for the State of North Dakota, 1932, (n.p., 1932), pp. 7-23; Fifteenth Annual Report of the Coal Mine Inspection Department for the State of North Dakota, 1933, (n.p., 1933), pp. 6-21; Sixteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1934, (n.p., 1934), pp. 6-22; Seventeenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1935, (n.p., 1935), pp. 8-24; Eighteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1936, (n.p., 1936), pp. 8-25; Nineteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1937, (n.p., 1937), pp. 8-24; Twentieth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1938, (n.p., 1938), pp. 8-25; Twenty-First Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1939, (n.p., 1939), pp. 8-25.

NOTE: Active refers to the number of mines that have produced coal in a given year, according to the Coal Mine Inspection Department. The mine inspector usually has a large number of mines listed in his report, more than that in the above table. His reports include new mines, mines that are on fire, those that have caved in, those that have been condemned, the mines that simply lie dormant and those mines in which the operators have failed to report the necessary information. These mines are classified as inactive and, therefore, are not listed above.

number, but they produced forty-six percent of the total tonnage. More significant is the fact three strip mines owned by two companies produced eighty-six percent of the total production for surface mining. The three operations included the Zap Colliery Company at Zap, Mercer County, with a production of 155,651 tons and the Truax-Traer Coal Company mines at Velva and Kincaid with a combined tonnage of 604,208. Steam shovels and draglines were responsible for the tremendous production level at all three mines.<sup>3</sup>

Strip operations were not only more profitable than deep mining, but then also were more economical. The underground mines generally lacked a systematic mining procedure. Most mines were haphazardly worked. This condition often reduced coal production in the deep mines to less than sixty percent of the whole. Operators of surface structures on the other hand, extracted lignite with a simple, yet thorough, process that returned a high percentage of the available coal. Strip mines were also more economical in respect to manpower. In 1929 the Knife River Coal Mining Company at Beulah, Mercer County, a subterranean structure, produced 318,964 tons of coal. The Truax-Traer mine at Kincaid produced 317,518 tons, approximately the same amount as Knife River. Both mines used modern machinery to extract the lignite. Knife River used undercutting machines to break up the coal and hoisting devices to transfer it to the surface. At the Kincaid field, draglines removed the overburden and smaller steam shovels dug the coal and loaded it into haulage cars. The economic advantage of Truax-Traer over Knife River lies in the ratio of employment to coal production. At the subterranean

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<sup>3</sup>State Mine Inspector's Report, 1929, pp. 8-21.

mine 220 miners were employed and at the strip, only forty-eight. Further comparisons show that the mine at Beulah produced only 1,459 tons per man in 1929. At Kincaid the ratio stood at an amazing 6,406 tons per man.<sup>4</sup> The surface mine definitely had the economic advantage over the underground mine.

The largest strip operation in the state during this era was indeed the Truax-Traer Coal Company. This immense open pit enterprise began in 1902 as a small underground mine at Noonan in Divide County. It was owned and operated by Harold Truax. The lignite was ". . .dug in the old 'underground' way" and ". . .hailed by team and wagon to points as far away as Westby, Montana. . . ."<sup>5</sup> In 1912 Elmer Truax joined the mining business at Noonan. The operation expanded with \$20,000 invested in coal cars, tracks, timbering and surface equipment. The mine buildings included an office, an engine house, a blacksmith shop, a powder building, a cook house and bunk house. Before long, the Truax brothers became large shippers of the native fuel. In 1917, the company shipped 50,282 tons of lignite valued at \$125,705.<sup>6</sup>

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<sup>4</sup>State Mine Inspector's Report, 1929, pp. 10, 13; State Mine Inspector's Report, 1926, p. 24; Knife River Coal Mining Company, Beulah Coal, (n. p., 1924), p.2.

<sup>5</sup>"A.H. Truax, Lignite Mining Pioneer In Region, Dies," Minot Daily News, 21 June 1963, p. 6.

<sup>6</sup>Sixth Biennial Report of the State Engineer to the Governor of North Dakota For the Years 1913-1914, (Devils Lake: Journal Publishing Company, State Printers, 1914), pp. 128-29; Eighth Biennial Report of the State Engineer to the Governor of North Dakota For the Biennial Period Ending June 30, 1918, (Bismarck: Tribune Printing Company, 1918), p. 114.



In 1918, the Truax brothers moved their lignite enterprise to Kincaid in Burke County. There they began their ". . .history-making job of strip mining."<sup>7</sup> The eight foot vein of coal at the Kincaid field was initially uncovered by horses and scraper. The firm, however, soon replaced the horse and scraper with a Bucyrus 35-B steam shovel. The shovel had a half cubic yard capacity--a small machine in comparison to today's giant earth movers. The 35-B shovel was ". . .excellently adapted to shallow stripping. . ." but technologically was unable to recover deep buried coal veins. In 1922, therefore, the Truax Coal Company purchased a 175-B steam shovel capable of removing the deep overburden. The company also acquired a Bucyrus 50-B 1 3/4 cubic yard shovel for loading the lignite. The installation of these two steam shovels ". . .made possible the handling of first the overburden, and then the coal itself from vein to cars by modern excavating machinery."<sup>8</sup> By 1923, the shovels at the Kincaid field were producing over 100,000 tons of coal per year.<sup>9</sup>

The Truax brothers continued to enlarge the Kincaid operation and to increase its production level. The company installed a narrow gauge railroad system with five engines and several coal cars equipped with a side dumping arrangement to haul the lignite from the pit to

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<sup>7</sup>"E.M. Truax Is Victim of Heart Attack in Illinois," Ward County Independent, 9 January 1936, p. 3.

<sup>8</sup>"Great Range Possible With Eight Yard Load," Minot Daily News, 20 October 1927, p. 13.

<sup>9</sup>State Mine Inspector's Report, 1923, p. 13

the tipple. The tipple, a modern steel structure with a shaker screen system, graded coal into various sizes, including lump, steam, nut, screened nut and screening coal. After the coal was graded, it was loaded into Great Northern railroad cars by mechanical loaders purchased from the Ottumwa Box Car Loader Company. The coal was shipped to all points in North Dakota and heated numerous schools, hospitals, institutions, businesses and homes. By 1926, the company was hiring seventy-five miners and selling lignite at \$1.90 per ton. The amount of coal excavated reached 171,804 tons valued at \$326,966.<sup>10</sup>

Events during the following year ultimately led the Truax Coal Company into national prominence as one of the country's largest strip mining firms. Glen W. Traer, Sr.<sup>11</sup> a pioneer in the fuel business from Chicago, Illinois, became interested in North Dakota's brown coal in 1924. Traer's desire was to extend his business interests into the state, but more importantly, he wished

. . .to participate in the development of a project where the business could grow with the state, as contrasted with possibilities of central states where a new business would be obliged to enter a field already highly competitive."<sup>12</sup>

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<sup>10</sup>"Scrapper Line Loaders Bought From Ottumwa," Minot Daily News, 20 October 1927, p. 17; State Mine Inspector's Report, 1926, pp. 8, 24.

<sup>11</sup>Glen W. Traer, Sr., operated mines in Illinois and Iowa. In 1924 he formed a syndicate to investigate the coal fields in Wyoming and in North and South Dakota in order to determine what specific area would be most favorable in terms of mining conditions, coal resources, transportation facilities and markets. His choice was North Dakota. See "Lignite Deposit Proved Major Find in Ward County," Minot Daily News, 19 August 1961, sec. C, pt. 2, p. 2.

<sup>12</sup>"State Has Wonderful Future Avers Traer of New Lignite Firm," Minot Daily News, 20 October 1927, p. 20.

Traer made two trips to the coal fields near Velva in McHenry County and secured options on lands which seemed most desirable. He then ordered a series of investigations in which seven hundred test holes were sunk on 3,000 acres of land. The coal was chemically analyzed, and the boundary of the lignite bed was determined as was the anatomy of the overburden. After over two years of investigations, the tests indicated that the Velva field contained a uniform bed of high quality coal averaging fifteen feet in thickness with an overburden of soft glacial drift. With a confident outlook, Traer purchased 1,100 acres of land in the Velva area and in 1927, he merged his financial resources with the strip mining expertise of the Truax brothers and the new enterprise became the nationally known Truax-Traer Coal Company.<sup>13</sup>

The year 1927 saw further developments. The Truax-Traer Coal Company bought out a very large strip mine located one-half mile north of the mine at Kincaid. The mine, owned by the Whittier-Crockett Coal Company, began operations in 1919. The coal bed was eight feet thick and the overburden averaged twenty-eight feet. Within one year it became the largest strip mine in the state, with a production of 58,083 tons. Although Whittier-Crockett did not maintain its record as the largest strip mine, it did continue to expand. By 1926, the company was a substantial business. It had in use a dragline with a 2½ yard capacity, along with a six cubic yard Marion steam shovel and also a Marion shovel with a 1 3/4 cubic

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<sup>13</sup>"Velva Coal Field Prospected With Great Care Before Mine Lands Purchased by Company," Minot Daily News, 20 October 1927, p. 19.

yard capacity. Together the shovels were valued at \$163,000. A modern steel tippie, built at a cost of \$75,000, prepared coal in five sizes; lump, steam, four inch, nut and screened slack. Modern machinery also hauled the coal from the tippie to the railroad cars. Seventy-five men were employed in and around the mine and were capable of excavating 2,500 tons per day. By the time it was sold to Truax-Traer, the mine was producing almost 125,000 tons of lignite.<sup>14</sup> The addition of the Whittier-Crockett Coal Company to the holdings of Truax-Traer was the first step in the building of a coal empire.

The second step was the opening of the Velva mine in October of 1927. Underneath the 1,100 acres of land owned by the company southwest of the town were an estimated 31,000,000 tons of coal, enough to keep the mine in operation for seventy-seven years based on a 400,000 ton annual capacity. The company invested roughly \$1,000,000 into the retrieval of that thirty-one million tons. The most costly item was, of course, the shovel. It was a massive product of mining technology and upon its arrival at the mine site, it received a lengthy description on page one of the Minot Daily News:

Visitors at the mine usually center their inspection on the new shovel, especially constructed in several ways for the use of the Truax-Traer Company. The dipper used to scoop up the earth has a capacity of eight cubic yards. It has a boom 90 feet in length and a stick 65 feet long, and is operated by electricity. . . .the huge new power shovel. . . .was purchased at a cost of \$140,000, which includes \$19,000 paid for freight to ship the 370 ton machine from Wisconsin to the site of its operation.<sup>15</sup>

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<sup>14</sup>State Mine Inspector's Report, 1920, pp. 11, 18; State Mine Inspector's Report, 1926, p. 23.

<sup>15</sup>"Truax-Traer Launch Immense Industrial Venture Near Minot," Minot Daily News, 20 October 1927, p. 1.

The 320-B Bucyrus shovel, described above, was used in stripping the overburden which averaged twenty-five to thirty feet. From the pit the lignite was loaded into four ton cars by a Bucyrus 50-B loading shovel. The coal cars were drawn by five Plymouth gasoline engines and ran on tracks from the top of the vein to an extremely up-to-date tipple.<sup>16</sup>

The tipple was another extravagant structure designed particularly for operation at the Velva field. It was build by the Pittsburg Boiler & Machine Company of Pittsburg, Kansas at a cost of \$80,000. The steele refining plant was an excellent example of coal production via assembly line. The process is described below.

. . .the tram cars as they come in from the pit, dump the coal from the car by the use of a Pittsburg rotary dump which turns the car upside down, making a complete revolution without uncoupling the car from the one next to it in the train. The coal passes into a hopper which has sufficient capacity to allow the dumping of several cars. The bottom of the hopper forms a Pittsburg reciprocating feeder which gives an even flow of coal to the Pittsburg conveyors or direct to a Pittsburg crusher. . .capable of crushing a lump of coal five feet long and from two to three feet thick. . .

After leaving the main conveyor, the coal passes onto the Pittsburg shaker screen where it is graded into different sizes for the market. The coarser sizes pass onto Pittsburg picking tables where it is hand picked and loaded into the cars. The finer coal passes into a Pittsburg rapid shaker screen where it is further graded and sized, then is conveyed to the storage bins or to the cars.<sup>17</sup>

Other labor-saving devices included an Ottumwa box car loader for loading large lumps of coal and two Ottumwa portable handy belt loaders for loading smaller grades. The three devices were capable

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<sup>16</sup>"Great Range Possible," Minot Daily News, p. 13.

<sup>17</sup>"Tipple Cost \$80,000 At Velva Field," Minot Daily News, 20 October 1927, p. 11.

of loading coal more meticulously than by the most careful hand labor.<sup>18</sup> The whole process from the pit to the railroad cars was a highly efficient production of lignite coal on a massive scale.

Although machines replaced the efforts of human labor, men still controlled the machines. A year after the Velva mine opened, sixty-five men were employed throughout the mine area as shovel operators, pit formans, tram operators, preparation plant operators, maintenance and office personnel.<sup>19</sup> Since the mine was situated quite a few miles from Velva, Truax-Traer erected a series of dwellings in order to house the employees and their families. The homes lined both sides of what was called "Main Street." The mining camp also had a general merchandise store and a commissary to serve the needs of the people. The company town was also the location of the mine offices.<sup>20</sup>

With the Velva mine on the productive scale, the Truax-Traer Coal Company became the largest coal enterprise in North Dakota. The combined production of the three mines at Velva and Kincaid amounted to 573,744 tons in 1928.<sup>21</sup> The company, however, was not content with just three mines in North Dakota, but secured holdings throughout the United States as well as in Canada. During the late twenties, mines were taken over in Illinois, West Virginia and in Saskatchewan, Canada. Eventually Truax-Traer established general offices in

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<sup>18</sup>"Scrapper Line Loaders," Minot Daily News, p. 17.

<sup>19</sup>State Mine Inspector's Report, 1928, p. 24.

<sup>20</sup>"New Town at Truax-Traer Mine," Minot Daily News, 20 October 1927, pp. 19-20.

<sup>21</sup>State Mine Inspector's Report, 1928, pp. 20, 25.

Chicago, Illinois with branch offices in Cincinnati, Ohio, Richmond, Virginia, Galesburg, Illinois, St. Louis, Missouri, Des Moines, Iowa, Detroit, Michigan, Fergus Falls and Minneapolis, Minnesota, Estevan and Regina, Saskatchewan and Winnipeg and Brandon, Manitoba. In North Dakota, sales offices were established in Minot, Jamestown, Devils Lake and Grand Forks.<sup>22</sup>

The opening of the several other mines did not end the years of expansion for Truax-Traer in North Dakota. One of the largest underground mines in the state came under the control of Truax-Traer. The Washburn Lignite Coal Company, the unrivaled leader in coal production during the 1900-1920 era, was leased to the new commanders of the soft coal industry in 1930 and was converted into a strip mine. From 1920 until it was leased ten years later, the mining company at Wilton experienced a prosperous, yet turbulent decade. In 1921 the Washburn company was one of the largest mines in the state. Under the 2,700 acres of land owned by the firm were an estimated 20,000,000 tons of lignite. The company installed the most modern equipment including electrically operated undercutting machines, hoisting devices, ventilation systems, and a modern steel tippie capable of screening coal into five grades. An electrically operated railroad system, used for hauling the coal to the main shaft, ran for twenty-five miles into the deep workings of the mine. Almost 400 men were employed, and their wages placed them in a class

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<sup>22</sup>"A.H. Truax Dies," Minot Daily News, p. 6.

"among the highest paid workmen in North Dakota."<sup>23</sup> The daily capacity was 2,500 tons. Productivity reached 240,000 tons in 1921 and lignite sold at an all time high of \$3.00 per ton. The capital result was \$732,094.40 and general prosperity reigned in Wilton.<sup>24</sup>

The fair wind days at the mine, however, came to an end during the 1923-24 coal seasons. The uncontrolled power of Mother Nature and subsequent economic conditions combined to form a turbulent period and the eventual demise of the United Mine Workers of America local at Wilton.<sup>25</sup> In the fall of 1923, Wilton miners worked less than half-days. As winter passed, both miners and operators "prepared for a showdown" in the spring, for the union contract would expire on March 31, 1924.<sup>26</sup>

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<sup>23</sup>E.G. Wanner, "North Dakota's Largest Single Industrial Concern," North Dakota Good Roads Magazine (April 15, 1922): 18. Frances Wold, "The Washburn Lignite Coal Company: A History of Mining at Wilton, North Dakota," North Dakota History 43 (Fall 1976): 15.

<sup>24</sup>State Mine Inspector's Report, 1921, p. 15.

<sup>25</sup>From 1923 to 1924, miners at Burlington in Ward County, Beulah and Zap in Mercer County, and Williston and Hanks in Williams County were periodically out on strike. The strikes at these locations were relatively short and unimportant. As high ranking officials from District 27 of the UMW suggested in reference to Beulah, ". . .the strike is not of any consequence or of any importance." On the basis of this statement, the strikes at these sites have not been included above. The inclusion of the strike at Wilton was based on the fact that the local was broken during this time and it had a significant effect upon the subsequent performance of the mining company. See "Proceedings of the Ninth Consecutive and Sixth Biennial Convention, District No. 27, United Mine Workers of America Held in Billings, Montana, March 3, 1924," p. 7, [located in the files of the District 15 Office of the United Mine Workers of America, 1516 Xavier Street, Denver, Colorado].

<sup>26</sup>Wold, "The Washburn Lignite Coal Company," p. 16.



During the fateful month of March, District 27 of the UMW held a convention in Billings, Montana, to discuss the situation. Company officials and union representatives from Wilton attended the meeting. On March 27, Joseph Bosone, President of District 27, stated that the miners would request a three-year contract based on the wage scale and working conditions of the old contract.<sup>27</sup> The management at Wilton refused to sign a new contract and shut down operations for the summer months, thereby evading a confrontation with the UMW. Negotiations throughout the summer only confirmed the impossibility of a settlement before the opening of the new coal season. The company directors declared that the Washburn Lignite Coal Company could not compete with small non-union mines unless they reduced wages. Furthermore, the directors threatened to close down operations unless the miners accepted the reduction. From the union point of view, the company was cutting wages in order to subsidize lower costs to consumers and, in turn, the miners threatened to strike if there was no contract.<sup>28</sup>

On August 5, the Wilton Mine opened on a non-union basis. The company offered to hire the miners at a twenty-five percent reduction in pay and without a contract. The UMW's response was to call a strike. The miners attempted to strengthen their position by picketing the mine and by boycotting Wilton. Meanwhile, Stanley Washburn, the son of General Washburn and President of the company, met with Bosone and other UMW officials for a series of negotiations.

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<sup>27</sup>Ibid.

<sup>28</sup>"Miners of Wilton Are On Strike For Old Wage Scale," Farmer-Labor State Record, 7 August 1924, p. 1.

No agreement was reached and the company immediately recruited a group of strikebreakers. The reaction of the union miners to the importation of "scabs," was one of hard feelings, violence, and eventually the destruction of private property.<sup>29</sup>

The strike continued into late September and as the days grew into weeks, the striking miners could not hold out. Gradually a few of them returned to work. Many felt that the national UMW was not giving them enough support, and others simply could not afford to strike anymore. In the end, the company broke the UMW local at Wilton. The majority of the miners returned to work without a contract, but others refused to work without such a settlement and left Wilton permanently.

The 1924 strike at Wilton, according to one author, broke ". . . the back of the company, the town of Wilton and many unfortunate people."<sup>31</sup> In regard to the coal company, the above statement becomes quite true in view of the production figures, employment and the price of coal for the years following the strike. The company lost many good workers, productivity plunged to 158,278 tons and the price of coal dropped to \$1.92 during the first year after the strike. Throughout the next three years production rose steadily and in 1928

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<sup>29</sup>"Mine Workers At Wilton Resent Nestos' Threat to Call Out Militia in Order to Terrorize the Community," North Dakota Nonpartisan, 10 August 1924, p. 1; Wold, "The Washburn Lignite Coal Company," p. 17.

<sup>30</sup>John A. Gjevre, Saga of the Soo: West From Shoreham, (LaCrosse, Wisconsin: By the Author, 1973), p. 52.

it reached 228,692 tons. Employment was up, but the brown coal sold for only \$1.60 per ton.<sup>32</sup>

The year 1928 was not only twelve months of limited prosperity but also the end of an era in the history of one of the state's oldest and largest underground mines. In April of that year, the Washburn Lignite Coal Company was sold to the Otter Tail Power Company of Fergus Falls, Minnesota. Prior to the sale, the power company had built a 3000 kilowatt steam generating plant along the Missouri River near Washburn for the production of electricity. The need for a fuel to generate the steam prompted Otter Tail to purchase the readily available lignite at the Wilton mine. Otter Tail operated the mine until June, 1930, at which time, it was leased to Truax-Traer. Within a few months, the deep mine had been converted to a full strip operation, and by the end of the first short coal season, the power shovels had hoisted over 143,000 tons of coal from the open pit.<sup>33</sup>

The Truax-Traer Coal Company was firmly rooted in North Dakota by 1930. In 1920 it was an average strip mine operation but by the end of the decade it was unsurpassed in the production of the fossil fuel. With mines at Kincaid, Velva and Wilton producing coal in the several hundred thousand ton range, with power shovels, tipples and narrow gauge railroads valued at several million dollars,

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<sup>32</sup>State Mine Inspector's Report, 1925, p. 12; State Mine Inspector's Report, 1928, p. 20.

<sup>33</sup>Gjerve, Saga of the Soo, p. 52; Mary Anne Barnes Williams, Pioneer Days of Washburn, North Dakota and Vicinity, Book One, (Washburn: Washburn Leader, 1936), p. 45; State Mine Inspector's Report, 1930, p. 9.

and with camp dwellings the size of small towns, Truax-Traer became the symbol of the 1920-1941 era in coal development.

Another strip mine to make its name known during the decade of the 1920's was the Zap Colliery Company located two miles east of Zap. Stripping began in 1922 under the operation of Hadley M. Graves. The vein measured about eleven feet thick and was discovered at a depth of thirty feet. A 4½ cubic yard steam shovel excavated the fuel and dumped it into coal cars which were pulled up to the tippie by three Vulcan steam engines. The coal was prepared in three sizes and mechanically loaded into railroad cars for transport throughout the state. The coal from the Zap Colliery was sold under the trade name "Indian Head Lignite." From its inception until 1929, the enterprise had a seven year history of sound prosperity. Beginning with a fair-sized productivity of 65,000 tons in 1923, excavation of the soft coal climbed steadily upward with the exception of a 5,000 ton drop in 1926. By the end of the twenties, the Zap Colliery Company was producing over 155,000 tons of coal which netted the firm \$263,447.33. By 1929 "Indian Head Lignite" was the trade name of the largest strip operation west of the Missouri River.<sup>34</sup>

Divide County also laid claim to a substantial strip mine under the name of Baukol-Noonan Lignite, Inc. During the fall of 1923, a young man named Harris Baukol was "keeping books" for the

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<sup>34</sup>C.B. Heinemeyer, Historical Data of Mercer County, North Dakota, (Hazen: Hazen Star, 1932), p. 59; State Mine Inspector's Report, 1923, p. 15; State Mine Inspector's Report, 1924, no page numbers; State Mine Inspector's Report, 1925, p. 16; State Mine Inspector's Report, 1926, pp. 13, 43; State Mine Inspector's Report, 1927, p. 18; State Mine Inspector's Report, 1928, p. 23; State Mine Inspector's Report, 1929, p. 13.

Hought Coal Company, which operated a small strip mine near Noonan. Baukol became interested in the subterranean resource. He ". . . envisioned strip mining on a larger scale than the underground process that had been used."<sup>35</sup> In 1928 Baukol and Hugo Domrese, an experienced coal operator from Larson in Burke County, formed a holding company to secure coal lands east of Noonan. They acquired an option on the Hought Coal Company land and leased approximately 900 acres within the area. The two industrious men conducted investigations into the quality of the lignite and explored the field for the largest seams of coal. The first tests were done by the hand auger method in which a small sample of the fuel was brought to the surface and examined. If a certain bed looked promising, a larger test pit was dug and the vein was inspected first hand. Domrese was asphyxiated while investigating one of the seams. The results of the tests indicated that the coal averaged 6,000 tons per acre, had a heating capacity of 7000 to 75000 BTU's and was considered ". . . the best quality lignite in the state of North Dakota."<sup>36</sup>

In 1929, Baukol incorporated a mining company under the name of Baukol-Noonan Lignite, Inc. to uncover the estimated 5,000,000 tons of coal that lay twenty to sixty feet beneath the surface. An eight cubic yard Bucyrus steam shovel was shipped from Pittsburg, Kansas and was placed in the field to remove the overburden. A

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<sup>35</sup>History Book Committee, Divide County History, (n. p., 1970), p. 385.

<sup>36</sup>Stories and Histories of Divide County, Written by the Participants or Relatives, (n. p., 1964), p. 12; Divide County History, p. 385.

smaller loading shovel hoisted the coal from the pit into small trucks and horse-drawn wagons. The trucks and wagons delivered the coal to an electrically operated tippie where it was processed into four grades. A railroad spur was constructed from the tippie to the Great Northern Railroad. Storage tracks capable of holding 100 coal car loads for future shipment were built near the mine.<sup>37</sup> On December 7, 1930 Baukol-Noonan made its first shipment of coal, but it was late, for many of the orders had already been filled.<sup>38</sup> In fact, the whole first year in the lignite business was one of disappointment for the company, with a shipment of only 30,000 tons.<sup>39</sup>

During the succeeding years however, the young coal firm modernized the mine and increased its productivity. The horses were put out to pasture with the installation of a narrow gauge railroad system. Two Plymouth locomotives began hauling the coal in ten five-ton cars from the pit to the tippie. In 1931 the steam shovel retrieved over 60,000 tons of lignite and by 1933, Buakol-Noonan had become the third largest mining company in the state with a production nearing 200,000 tons.<sup>40</sup>

At approximately the same time as the bookkeeper from Noonan became interested in the soft coal, a road contractor, working near Garrison in McLean County, decided that coal mining had more potential than the transient nature of his construction trade.

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<sup>37</sup>Ibid.

<sup>38</sup>Stories and Histories of Divide County, p. 12.

<sup>39</sup>Ibid.

<sup>40</sup>Divide County History, p. 385; State Mine Inspector's Report, 1931, p. 10; State Mine Inspector's Report, 1933, p. 9.

Henry O. Stevens, a partner in the Stevens Brothers' Construction Company of St. Paul, Minnesota began building twelve miles of roadway west of Garrison in the spring of 1922. When he had completed the roadbed, the operators of the Kunkel-Freddendoll Mine requested Stevens to put his horse-drawn graders to the task of removing the overburden at the small strip mine. It was during his employment at Kunkel-Freddendoll that Stevens realized the potential and became interested in mining coal. With "much of the needed equipment, he decided not to move on with his road construction, but to go into coal mining. . ."41 His venture into the mining of the fossil fuel eventually became known as the Stevens Brothers' Coal Company.

Stevens purchased several parcels of land south of Garrison and placed his horses and elevated graders in the field to retrieve the seven foot vein of coal. He also began building a permanent campsite. Before long Stevens had built two large wooden barns to house the horses and granaries to store the feed. The miners were also provided with housing and provisions. Bunk houses quartering about thirty-five to forty men were constructed by the company. Miners with families were housed in small homes surrounding the mine. A cook house with a large dining room and a commissary accommodated the nutritional needs of the employees. Stevens also built an office, a blacksmith shop, a two and one-half mile spur line from the Soo Railroad to the mine, and a wooden tipple which graded coal into slack, nut and lump sizes.<sup>42</sup>

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<sup>41</sup>"'Grand Lady' of Garrison Bess Stevens," McLean County Independent, 28 July 1977, p. 9.

<sup>42</sup>"'Grand Lady,'" McLean County Independent, p. 9; State Mine Inspector's Report, 1926, pp. 35-36.

Within a few short years Stevens had the mine outfitted with modern excavating machinery. Horse power was replaced with steam power in the form of a dragline which removed the twenty odd feet of overburden and a smaller steam shovel for loading the brown coal. Gasoline trucks were installed to haul the lignite from the pit to the tipple.<sup>43</sup> From 1925 to 1929, the production level at the surface mine averaged about 47,000 tons and in 1930 it exceeded 53,000 tons.<sup>44</sup> The coal was shipped to all parts of North Dakota as well as to neighboring states. The Stevens Brothers' Coal Company had become a serious competitor in the field of coal marketing. Shortly after the mine had opened, Stevens Brothers' lignite was advertised as "the coal that has made more friends in six months than any other coal in six years."<sup>45</sup> By 1930, the road contractor's mine was marked as one of the ten largest coal mining companies in the state.

During the 1920's the commercial stripping operations made their debut, and became the general form of coal mining in the state. Smaller surface mines however, also made their way into the Coal Mine Inspection Reports. Shortly after the Truax brothers opened the Kincaid field in Burke County, J.S. Greenup started strip mining at nearby Columbus and he named the operation the Sunlight Coal Company,

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<sup>43</sup>Ibid.

<sup>44</sup>State Mine Inspector's Report, 1925, p. 15; State Mine Inspector's Report, 1926, p. 11; State Mine Inspector's Report, 1927, p. 16; State Mine Inspector's Report, 1928, p. 23; State Mine Inspector's Report, 1929, p. 12; State Mine Inspector's Report, 1930, p. 12.

<sup>45</sup>V.E. Smart, North Dakota Lignite Coal Rates With Distances From Shipping Points To All Stations in North Dakota, (n. p., 1923), p. 10.



perhaps in reference to the open nature of strip mining. In 1921, twenty-one miners employed by Greenup, excavated 28,500 tons of lignite. Sunlight coal sold at \$2.50 per ton and the total income amounted to \$71,250.00.<sup>46</sup> In McLean County, Stevens Brothers' Coal Company was not the only lignite business that made the city of Garrison famous. Garrison was also well known for its shiny coal produced by the Rupp Coal Company. This was a fair sized strip mining outfit which was opened in 1926 by Edwin Rupp. (Rupp had previously operated an underground mine by the same name.) From 1926 until 1929, Garrison's number two strip mine had an average productivity of 23,000 tons per year.<sup>47</sup>

Although the technology behind the strip mine revolutionized the lignite industry in the state, the underground mines continued to play an important, if somewhat diminished, role in the history of coal development. As stated earlier, the deep mines were harvesting less than sixty percent of the feasible amount because of a lack of systematic mining procedures. This condition was often noted by the State Coal Mine Inspector. In the report for 1923, Inspector J.P. Mellon stated:

With the exception of a very few mines [underground], the amount of coal mined at present is about 55 percent of the whole. . . We find that when an operator has had a layout sketch of his mine, made by a competent engineer, the ratio of coal mined increases, costs are lower and number

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<sup>46</sup>State Mine Inspector's Report, 1921, pp. 7,11,15.

<sup>47</sup>State Mine Inspector's Report, 1926, p. 36; State Mine Inspector's Report, 1927, p. 16; State Mine Inspector's Report, 1928, p. 23; State Mine Inspector's Report, 1929, p. 12.

of accidents reduced. Approximately 90 percent of the coal should be mined.<sup>48</sup>

Three years later the inspector reported little progress, but he remained optimistic.

North Dakota Lignite Mines are as a rule developed along the double entry system. A few of the smaller operators use but a single entry, and there are some who have been found to follow no system whatsoever, this condition is being changed. . .to increase the percentage of coal recovered.<sup>49</sup>

Besides being inefficiently operated, the deep mines were often dangerous. Carbon dioxide, commonly known to miners as Black Damp, became a recurring problem because of poor ventilation. It reduced the efficiency of the miners and in some cases caused death. Fires resulting from explosive gases caused untold damage and claimed lives when mining companies lacked rescue equipment. The inspection reports continually emphasized the need for safe mining conditions and the installation of rescue apparatus.<sup>50</sup>

During the decade of the twenties, the number of large underground mines decreased to a point where only one could claim notoriety as a substantial enterprise. The Knife River Coal Mining Company of Beulah was the number one deep mine and for several years it led the state in coal production. Knife River sunk the main shaft of the mine in 1917, and at that time it was known as the Beulah Coal and Mining Company (see Chapter III for a discussion of the company's early history). In 1922, the firm was reorganized as the Knife River

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<sup>48</sup>State Mine Inspector's Report, 1923, p. 4.

<sup>49</sup>State Mine Inspector's Report, 1926, p. 4.

<sup>50</sup>State Mine Inspector's Report, 1926, p. 4; State Mine Inspector's Report, 1935, p. 3.

Coal Mining Company. Because of excessive water in the old operation, a new mine was opened north of Beulah. The double entry drift style mine contained a vein twenty-two feet thick, averaged eight thousand BTU's, with a five percent ash content. It was an exceptional bed of lignite.<sup>51</sup>

The deep mining company installed up-to-date equipment, and eventually human labor had little to do with the actual mining of the coal. The undercutting machines were remarkable devices. In a pamphlet issued in 1924, Knife River gave a description of them and their abilities.

These machines have a seven foot cutter bar equipped with [a] rotating chain of bits and picks to cut the coal with a twenty foot sweep, operating without leaving the track. Each of these machines is capable of cutting one thousand tons of coal per day.<sup>52</sup>

After the coal had been cut it was loaded into mine cars which were pulled by an electric locomotive to the mine entrance. There the cars were coupled to a steam locomotive (fired with Knife River coal) and taken a distance of two miles to the tipple. Rotary dumps loaded the coal onto the screen conveyors where coal crushers began the preparation process. The grades of "Beulah Coal" included lump, four inch, crushed coal and screenings. Mechanical loaders also put the lignite into the box cars of the Northern Pacific Railroad for shipment throughout the state.<sup>53</sup>

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<sup>51</sup>Mrs. D.H. Dettman, Chairman, Beulah, North Dakota Golden Anniversary, 1914-1964, (n. p., 1964), p. 102; Beulah Coal, p. 4.

<sup>52</sup>Beulah Coal, p. 3.

<sup>53</sup>Beulah Coal, pp. 10,14,16,; State Mine Inspector's Report, 1926, pp. 43-44.

The year 1925 was significant in the history of the Knife River Coal Mining Company. During the year, the company lost thousands of dollars when the old wooden tibble was destroyed by fire. Immediately they began building a new one, which was constructed of steel and concrete, a combination of materials with a higher resistance to combustion. The other development confirmed the value of lignite as a catalyst in the generation of electricity. In May, 1925 the Hughes Electric Company of Bismarck erected a power plant north of the mine to furnish the surrounding area with electric power. The company was owned in part by Edmund A. Hughes, one of the founders of the mining company. High lines were extended to Bismarck and Mandan. A year later, electric power was fed into the communities from Beulah west to Killdeer and south to Dickinson. In 1927, the power plant was enlarged to a capacity of 6,000 kilowatts. The two turbines, measuring 2,500 kilowatts and 3,500 kilowatts were powered by two 750 horse power boilers. The fuel used to fire the boilers was lignite slack from the Knife River mine.<sup>54</sup>

From 1925 to 1929, the Knife River Coal Mining Company demonstrated the effectiveness of the deep mine through its high productivity. Furthermore, as a healthy competitor, Knife River proved that the deep mine was quite far from extinction as a style of mining. Table 12 indicates the remarkable record held by Knife River. During each of the five years, the Beulah coal company excavated a sound increase in productivity. Employment also multiplied during those years. The price of the coal averaged about

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<sup>54</sup>C.B. Heinemeyer and Mrs. Ben Janssen, History of Mercer County, North Dakota, 1882 to 1960, (Hazen: Hazen Star, 1960), pp. 42-43.

TABLE 12

PRODUCTION RECORD OF THE KNIFE RIVER COAL  
MINING COMPANY, 1925-1929 (Tons)

1925	1926	1927	1928	1929
123,703	203,053	230,368	284,185	318,964

SOURCE: Seventh Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1925, (n.p., 1925), p. 16; Eighth Annual Report of the Coal Mine Inspection Department for the State of North Dakota, 1926, (n.p., 1926), p. 13; Ninth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1927, (n.p., 1927), p. 18; Tenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1928, (n.p., 1928), p. 23; Eleventh Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1929, (n.p., 1929), p. 13.

\$1.67 per ton.<sup>55</sup> In 1929 the Knife River Coal Mining Company was the largest producer of the native fuel, with Truax-Traer's Kincaid mine running a very close second place.

The opening of the Beulah power plant was an indication of changing times for Knife River coal. From 1923 until 1929, the mining property and the power plant went through a series of sales to various companies dealing in the manufacture of electrical power. In 1923, United Public Utilities of Bismarck acquired the mine. Hughes also had an interest in United Public Utilities. Four years later "Beulah Coal" was sold to the United Public Service Company of Chicago. In 1929 both the mining company and the power plant were sold to the Insull Interests of Chicago.<sup>56</sup>

<sup>55</sup>State Mine Inspector's Report 1925, p. 16; State Mine Inspector's Report, 1926, p. 13; State Mine Inspector's Report, 1927, p. 18; State Mine Inspector's Report, 1928, p. 23; State Mine Inspector's Report, 1929, p. 13

<sup>56</sup>Dettman, Beulah Golden Anniversary, pp. 102, 138.

During the twenties, there were many other smaller deep mines that produced over twenty thousand tons per year and were well known in their market area if not throughout the state. The High Grade Coal Company at Medora in Billings County was a familiar enterprise during the early years of the decade. Most of the "original Medora Coal"<sup>57</sup> as it was known, was shipped throughout the state. High Grade lignite also heated the State Normal School (Dickinson State College) at Dickinson.<sup>58</sup> The Pittsburg Coal Mining Company was another shipping mine. It was located in Dickinson and the firm consigned 29,000 tons of lignite over the rails of the Northern Pacific Railroad in 1925.<sup>59</sup> The company stood behind a bolstering motto, "You can buy a lot of Coal but you can't buy better Coal than our 'Old Hickory'."<sup>60</sup> Other mines of some note included the Lucky Strike Coal Company at Zap, the Hought Coal Company at Noonan, the Kunkel Coal Company at Garrison and the McCormick Coal Company in New Salem, Morton County.<sup>61</sup>

The list of smaller underground mines would not be complete without mention of the older mining firms that maintained a high productivity well into the 1920's. The Johnson Coal Company at Scranton in Bowman County was originally opened in 1907 (see chapter III), and

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<sup>57</sup> Smart, North Dakota Lignite Coal Rates, p. 8.

<sup>58</sup>"Bids For Coal Are Awarded," North Dakota Nonpartisan, 30 July 1924, p. 3.

<sup>59</sup>State Mine Inspector's Report, 1925, p. 17.

<sup>60</sup> Smart, North Dakota Lignite Rates, p. 8.

<sup>61</sup>State Mine Inspector's Report, 1923, p. 15; State Mine Inspector's Report, 1927, pp. 14, 17-18.

fifteen years later the business was producing over 26,000 tons.<sup>62</sup> Adams County had two older mining firms. The Haynes Coal Mining Company was established in 1907 and in 1923 the enterprise was still offering ". . . steady, dependable service . . . at all times," and "absolutely DRY" coal.<sup>63</sup> The South Dakota Coal Mining Commission bought the old Clermont Coal Company in early 1920 (see chapter III). After the coal commission took over the workings, the amount of coal excavated increased rather steadily to a high of 45,226 tons in 1927.<sup>64</sup> The Williston Coal and Ice Company was another older mining business and it had the largest producing mine in Williams County during the entire decade of the 1920's.<sup>65</sup> The town of Burlington in Ward County, one of the initial productive areas in the history of coal development, carried on its traditional role through the Miller Coal Company and the Burlington City Mine.<sup>66</sup>

During the 1920's, coal mining in North Dakota was an expanding industry. At a time when agriculture struggled with debts, high costs and low prices, banks collapsed because credit was extended far beyond the bounds of caution, and people left the state as a result of the farm failure, the mining of the soft coal was a profitable and a stable business.<sup>67</sup>

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<sup>62</sup>State Mine Inspector's Report, 1922.

<sup>63</sup>Smart, North Dakota Lignite Coal Rates, p. 6.

<sup>64</sup>State Mine Inspector's Report, 1927, p. 13.

<sup>65</sup>State Mine Inspector's Report, 1929, p. 16.

<sup>66</sup>State Mine Inspector's Report, 1928, p. 25.

<sup>67</sup>Elwyn B. Robinson, History of North Dakota, (Lincoln: University of Nebraska Press, 1966), pp. 372, 376.

Table 11 indicates the production levels for the years 1920-1929. In 1920 productivity stood as roughly 878,000 tons. By 1929 that figure was more than doubled. There were fluctuations in the tonnage record during the intervening years, but they may be attributed to changing winter conditions. The number of active mines also varied during these years. Again the statistics fluctuate in view of differing climatic conditions and because many small operators often mined coal during one season, closed the operation for the next two or three years and then eventually reopened. As productivity increased, so too did the amount of coal shipped throughout the state and into parts of Minnesota and North Dakota. The average price of coal decreased over the nine year period. In 1920, it sold for \$2.53 per ton and in 1929 it was down to about \$1.99.<sup>68</sup> It appears that the mass production of coal by the large companies forced the price downward as the decade passed. Another development during the twenties was the introduction of several types or sizes of coal in order to accommodate the varying needs of residential and business establishments. By 1929, the horses and mules had been put out to pasture and in their place, the huge steam shovels, undercutting machines, drills and narrow gauge railroads performed the task of removing the subterranean resource. The new technology also reduced the strenuous labors of men and elevated them to the position of controlling the power machines. Many of the large mines both underground and strip were totally mechanized by 1929. The decade of the 1920's can be characterized by four factors: tremendous technological advancement

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<sup>68</sup>State Mine Inspector's Report, 1920, pp. 11-13; State Mine Inspector's Report, 1929, pp. 10-16. The average price of coal was not listed by the mine inspector. However, the selling price for each mine was included and the above statistics were calculated from those figures.



an increasing number of mines, a decline in the coal price and an escalation in production.

As the state moved out of the twenties and into the economic crisis, mass unemployment, and traumatic conditions of the depression during the 1930's, the coal industry followed, although with much less hardship than that experience by other industries, namely agriculture. During the depression, the state of North Dakota suffered more than much of the rest of the nation.<sup>69</sup> Farmers suffered through droughts, grasshoppers and thirty-six cent wheat. As early as 1931 over half of the farmers in the northwestern counties of the state needed relief and in late 1936, one half of the total population or 330,000 people were on the relief polls. From 1932 to 1937 the personal per capita income of North Dakotans was only 47 percent of the national average. The result was a decline in land values, foreclosures on mortgages, outstanding loans, delinquent taxes, bank failures, increased numbers on relief, and an exodus of people out of the state.<sup>70</sup>

The economic collapse during the Great Depression did not wreck havoc on the state's coal mining industry, but it did force reverses in production and drove the price of lignite downward. Table 13 shows the productivity and the average selling price during the depressing.

In 1929, the output reached an all time high of two million tons. During the first year of the depression, production dropped only slightly, but in 1931 it fell to 1,552,242 tons. The year 1931 marked the lowest tonnage record during the depression. It was not only due to the economic

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<sup>69</sup>Robinson, History of North Dakota, pp. 397-400.

<sup>70</sup>Ibid.

TABLE 13

## PRODUCTION RECORD AND AVERAGE PRICE OF LIGNITE, 1929-1939

Year	Production <sup>a</sup> (tons)	Price <sup>b</sup> (per ton)
1929	1,909,303	\$1.99
1930	1,849,144	1.96
1931	1,552,242	1.69
1932	1,743,053	1.44
1933	1,872,381	1.38
1934	1,746,226	1.42
1935	1,828,213	1.40
1936	1,704,983	1.35
1937	2,184,927	1.33
1938	2,142,061	1.36
1939	2,176,841	1.30

SOURCE: Eleventh Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1929, (n.p., 1929), pp. 10-16; Twelfth Annual Report of the Coal Mine Inspection Department, 1930, (n.p., 1930), pp. 9-16; Thirteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1931), pp. 9-17; Fourteenth Annual Report of the Coal Mine Inspection Department for the State of North Dakota, 1932, (n.p., 1932), pp. 9-17; Fifteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1933, (n.p., 1933), pp. 8-16; Sixteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1934, (n.p., 1934), pp. 8-16; Seventeenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1935, (n.p., 1935), pp. 10-18; Eighteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1936, (n.p., 1936), pp. 10-18; Nineteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1937, (n.p., 1937), pp. 10-18; Twentieth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1938, (n.p., 1938), pp. 10-19; Twenty-First Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1939, (n.p., 1939), pp. 10-19.

<sup>a</sup>The production figure for 1936 appears somewhat low and resulted from a change in the reporting period. The 1936 report covered only the period from November 1, 1935 to June 30, 1936. The following reports covered the period July 1 to June 30.

<sup>b</sup>The average price of the coal was not listed by the mine inspector. However, the selling price of each mine was included and the above statistics were calculated from those figures.

effects of the depression, but also to the mild winter of 1930-31 and an increase in the number of non-commercial mines and the failure of the owners in reporting them to the state mine inspector. Gradually the industry escalated production, although in a rather vacillating manner. Eventually, in 1937, coal production passed the two million ton mark, thereby exceeding the industry's previous highest level in 1929. By 1937, the industry was emerging from the depression, at least in the area of production. As far as the price of lignite is concerned, it was at a high of \$1.99 in 1929, suffered a fifteen percent reduction from 1929 to 1931 and gradually decreased to a low of \$1.30 in 1939, a price which was only sixty percent of the 1929 rate.<sup>71</sup> The price of lignite had been dropping at a somewhat constant rate since about 1925 and the downward cycle may be the result of the mass production of coal by the large companies as was stated earlier, but when the industry entered the depressed years, it plummeted to an extremely low average. By 1941, the price stood at \$1.29, the lowest rate during the entire 1920-1941 era.<sup>72</sup> It appears that the economic conditions of the depression years, or simply the lack of income, forced the industry to reduce the price of

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<sup>71</sup>State Mine Inspector's Report, 1929, pp. 10-16; State Mine Inspector's Report, 1930, pp. 9-16; State Mine Inspector's Report, 1931, pp. 9-17; State Mine Inspector's Report, 1932, pp. 9-17; State Mine Inspector's Report, 1933, pp. 8-15; State Mine Inspector's Report, 1934, pp. 8-16; State Mine Inspector's Report, 1935, pp. 10-18; State Mine Inspector's Report, 1936, pp. 10-18; State Mine Inspector's Report, 1937, pp. 10-18; State Mine Inspector's Report, 1938, pp. 10-19; State Mine Inspector's Report, 1939, pp. 10-19.

<sup>72</sup>Twenty-Third Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1941, (n.p., 1941), pp. 8-17. The average price of the coal was not listed by the mine inspector. However, the selling price for each mine was included and the above statistic was calculated from those figures.

lignite in order to retain a sizeable market. For example, in 1933, the seven largest coal mines in the state produced almost sixty per cent of the lignite and they sold their coal at an average of \$1.24 per ton, a rate \$.14 less than the general average.<sup>73</sup>

The largest coal companies not only experienced a declining coal price, but also decreases in productivity. Their record followed closely the production history for the industry as a whole. There were fluctuations within the individual mines. However, taken together the leading mines followed the general pattern with a high point in 1929, a serious decrease in 1931, fluctuations from 1932 to 1936 and a sizeable escalation in 1937.<sup>74</sup>

More important than the production record was the fact that the large coal companies did little or no expansion into new coal fields during the depression. Truax-Traer with three of the largest mines did not open any new coal fields in North Dakota. The enterprise did open branch sales offices in a few of the state's cities. The Knife River Coal Mining Company did not sink any shafts into fresh fields but did improve the existing facilities with the installation of ventilation equipment, loading machines and additional

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<sup>73</sup>State Mine Inspector's Report, 1933, pp. 8-15. The average price of the coal was not listed by the mine inspector. However, the selling price for each mine was included and the above statistic was calculated from those figures.

<sup>74</sup>State Mine Inspector's Report, 1929, pp. 10-15; State Mine Inspector's Report, 1930, pp. 9-15; State Mine Inspector's Report, 1931, pp. 9-17; State Mine Inspector's Report, 1932, pp. 9-17; State Mine Inspector's Report, 1933, pp. 8-11; State Mine Inspector's Report, 1934, pp. 9-12; State Mine Inspector's Report, 1935, pp. 11-17; State Mine Inspector's Report, 1936, pp. 10-17; State Mine Inspector's Report, 1937, pp. 10-17; State Mine Inspector's Report, 1938, pp. 10-16; State Mine Inspector's Report, 1939, pp. 10-16.

locomotives for transporting the coal from the underground workings.<sup>75</sup> Zap Colliery Company did not expand into new areas until it had emerged from the depression. In 1939 Zap Colliery merged with the Dakota Mines Corporation of Zap, which opened in 1921. It was owned by B.A. Pratt and Hadley Graves. The new enterprise became known as Dakota Collieries.<sup>76</sup>

The sixth and seventh largest mines in the state, Baukol-Noonan Lignite, Inc., and Stevens Brothers' Coal Company, expanded vertically but not horizontally. In other words, their steam shovels did not unearth any new beds, but their production levels soared upward. Stevens Brothers' almost doubled its level from 1929 to 1936. Baukol-Noonan multiplied its tonnage record by a factor of 3.5 from 1930 to 1933. The two companies suffered reverses during the depression, but not until 1934-35.<sup>77</sup> The depression had little effect on their production levels. One reason for their unique record was the fact that the two firms had not reached their production capacity prior to 1930. Shortly before the arrival of hard times both coal companies switched their source of power from horses to draglines and steam shovels. With the augmented power, a

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<sup>75</sup>Dettmen, Beulah Golden Anniversary, p. 102.

<sup>76</sup>State Mine Inspector's Report, 1939, p. 14; Dettman, Beulah Golden Anniversary, p. 51.

<sup>77</sup>State Mine Inspector's Report, 1929, p. 12; State Mine Inspector's Report, 1930, p. 12; State Mine Inspector's Report, 1931, pp. 10, 12; State Mine Inspector's Report, 1932, pp. 10, 12; State Mine Inspector's Report, 1933, pp. 9, 11; State Mine Inspector's Report, 1934, pp. 9, 11; State Mine Inspector's Report, 1935, pp. 11, 13.

multiplication of their tonnage was inevitable. Consequently, their unique record becomes quite logical.

The operators of small mines including those that served local markets and those opened for personal use did not experience economic hardship during the depression. In fact, the number of small mines actually increased. During the thirties there were seven coal counties in the state that had no large commercial mines, shipped only a small amount of lignite, and produced less than 5,000 tons per mine.<sup>78</sup> The counties of Dunn, McKenzie, Mountrail, Oliver, Slope, Golden Valley and Billings combined did not produce what Stevens Brothers' Coal Company alone produced in any given year during the 1930's. Table 14 illustrates the increase in the number of small mines.

During the nine year span the number of mines more than doubled in the seven counties, and then began to decline in 1939. The production level rose from 24,243 tons in 1929 to a high of 45,018 in 1938.<sup>79</sup> There were many small mines throughout the entire coal region during the depression. The increase was due to the rise in the number of farmers mining their own coal in an effort to reduce expenses when drought conditions destroyed their livelihood.

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<sup>78</sup>State Mine Inspector's Report, 1929, pp. 11-14; State Mine Inspector's Report, 1930, pp. 10-14; State Mine Inspector's Report, 1931, pp. 10-15; State Mine Inspector's Report, 1932, pp. 10-15; State Mine Inspector's Report, 1933, pp. 8-13; State Mine Inspector's Report, 1934, pp. 8-14; State Mine Inspector's Report, 1935, pp. 10-16; State Mine Inspector's Report, 1936, pp. 10-15; State Mine Inspector's Report, 1937, pp. 10-15; State Mine Inspector's Report, 1938, pp. 10-16; State Mine Inspector's Report, 1939, pp. 10-16.

<sup>79</sup>State Mine Inspector's Report, 1929, pp. 11-14; State Mine Inspector's Report, 1938, pp. 10-16.

TABLE 14

NUMBER OF ACTIVE LIGNITE MINES IN THE STATE'S  
LESSER PRODUCTIVE COUNTIES, 1929-1939

Year	Billings	Dunn	Golden Valley	Mc Kenzie	Moun- trail	Oliver	Slope	Total
1929	3	8	2	5	8	5	2	33
1930	1	13	2	8	22	5	1	52
1931	3	12	2	8	25	6	1	57
1932	3	10	3	6	18	6	1	47
1933	4	5	2	4	12	5	1	33
1934	4	8	2	7	20	7	1	49
1935	2	8	3	7	26	8	3	57
1936	2	14	5	7	21	9	2	60
1937	4	13	5	6	16	11	4	59
1938	4	15	6	13	13	13	8	72
1939	3	13	6	8	16	11	6	63

SOURCE: Eleventh Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1929, (n.p., 1929), pp. 11-14; Twelfth Annual Report of the Coal Mine Inspection Department, 1930, (n.p., 1930), pp. 10-14; Thirteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1931, (n.p., 1931), pp. 10-15; Fourteenth Annual Report of the Coal Mine Inspection Department for the State of North Dakota, 1932, (n.p., 1932), pp. 10-15; Fifteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1933, (n.p., 1933), pp. 8-13; Sixteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1934, (n.p., 1934), pp. 8-14; Seventeenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1935, (n.p., 1935), pp. 10-16; Eighteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1936, (n.p., 1936), pp. 10-15; Nineteenth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1937, (n.p., 1937), pp. 10-15; Twentieth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1938, (n.p., 1938), pp. 10-16; Twenty-First Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1939, (n.p., 1939), pp. 10-16.

As the state mine inspector reported in 1930, "many small mines have opened up in western North Dakota where farmers, with their neighbors, mine their own coal."<sup>80</sup> Twelve months later the inspector stated that

<sup>80</sup>State Mine Inspector's Report, 1930, p. 5.

. . .the lignite deposit has been a godsend. . .to the drought sufferers in the western part of the state, who availed themselves of the opportunity to mine their own coal.<sup>81</sup>

The small mine owners, like the large commercial operators, had to contend with the declining coal price, but the small coal dealers were also forced into bartering their coal. For example, in Mercer County the local coal merchants of Stanton often traded lignite for chickens or garden vegetables. A six month supply of milk for a winter's stock of fuel was a prevalent type of trade. Labor was also bartered during the thirties. Those who could not pay for the coal and did not have anything to trade, worked for a specified amount of time in the mine in exchange for the coal. Many of the coal dealers were also farmers, and frequently, those in need of fuel worked seeding, plowing and harvesting the coal merchant's surface resources in exchange for fuel. Bartering lignite during the depression was a beneficial and a popular form of marketing.<sup>82</sup>

The economic plight of North Dakotans, like the rest of the nation during the dreaded 1930's soon became a problem too large for the state government to manage. By the end of 1932 public and private charities could no longer maintain the necessary relief. In January, 1933 a state emergency relief committee was organized by Governor William Langer. The state committee borrowed \$492,000 from

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<sup>81</sup>State Mine Inspector's Report, 1931, p. 5.

<sup>82</sup>Duane Skare, 1362 West Villaret, San Antonio, Texas to George Morman, miner and coal operator, Stanton, North Dakota, Interview, 17 December 1975.



the Reconstruction Finance Corporation and transferred it to county relief committees who in turn distributed the funds to the needy.<sup>83</sup>

In June, 1933, the federal government intervened and assumed the responsibility for relief with the installation of the Federal Emergency Relief Administration (F.E.R.A.). Under the F.E.R.A., which was administered by the state relief committee, work projects and direct relief were made available to those in need. The F.E.R.A. was followed by numerous other federal programs, including the Civilian Works Administration (C.W.A.), the Farm Security Administration (F.S.A.), the Civilian Conservation Corps (C.C.C.), and the Works Progress Administration (W.P.A.). These programs not only supplied direct relief, but also created literally thousands of work projects for the indigent. Many of the projects dealt with the construction of bridges, highways, dams, golf courses, swimming pools, tennis courts, parks, airports, libraries and other public structures. Additional projects included planting state-wide gardens, administering medical aid, serving school lunches, binding books, canning foods and sewing garments. From 1933 to 1940 the federal government spent approximately \$266,000,000 in North Dakota. Public relief during the depression became the biggest business in the state.<sup>84</sup>

The projects and programs of the federal government affected the coal mining industry to only a slight degree in comparison to the aid given to agriculture. The projects organized to aid the mining

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<sup>83</sup>Robinson, History of North Dakota, pp. 406-409.

<sup>84</sup>Ibid., pp. 406, 409.

industry pertained to those who mined the soft brown coal and to those who researched its inherent characteristics and discovered its capabilities. Most of the coal projects were research oriented. Very few of them were designed to aid impoverished miners and their families, primarily because there were less than 2,000<sup>85</sup> miners in the state. In addition, the mining population was entitled to the general relief benefits.

Although the aid to miners was minimal, there was one project which provided housing and subsistence for poverty-stricken miners near Minot. In 1934, the Rural Rehabilitation Corporation (R.R.C.), organized under the F.E.R.A., established the Burlington Subsistence Homestead Project. The program aimed to reduce the number of miners who were forced onto the relief rolls during the slack coal seasons, and to

. . . provide comfortable and attractive homes, supplementary income and the assurance of a plentiful supply of home produced milk, fruit, and vegetables for the families of the men employed in the lignite coal mines at Burlington.<sup>86</sup>

The R.R.C. purchased over 1,500 acres of land for the construction of the Burlington project. The acreage was divided into specified areas. Two hundred acres of the land were subdivided into seven acre homestead tracts. On each of the tracts, the R.R.C. built a house, a barn and a chicken house. A dam was constructed on the Des Lacs

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<sup>85</sup>State Mine Inspector's Report, 1930, pp. 9-16. The mine inspector did not report the total number of miners. However, the number of miners employed at each mine was listed and the above figure was calculated from those figures.

<sup>86</sup>Federal Emergency Relief Administration for North Dakota, Relief In Review In North Dakota, (Bismarck: n.p., 1936), p. 74.

River to impound water which was used to irrigate the homestead section. Another 500 acres were used by the mining families for the production of foodstuffs, such as potatoes and for grazing cattle. On the remaining portion of land, about 480 acres, the R.R.C. authorized the construction of a community coal mine. The R.R.C. authorized the project,

. . .in order that the miners making up the Burlington subsistence homestead settlement might establish a cooperative coal mine of their own and retain for themselves and their families all of the profits resulting from their coal mining endeavors.

The R.R.C. also made it possible for those miners so inclined and with sufficient capital, to purchase a homestead tract from the corporation and their terms were "easy" and covered "a long period of time."<sup>87</sup>

As mentioned earlier, most of the federal coal projects dealt with research. From 1934 through 1938 the F.E.R.A. and the W.P.A. authorized the University of North Dakota School of Mines to conduct eleven research projects on the topic of lignite coal.<sup>88</sup> Louis C. Harrington, Dean of the College of Engineering, William E. Budge, Professor of Ceramics Engineering, and A.M. Cooley, research assistant, served as directors of the projects. Four of the projects concerned the production of activated carbon from lignite. During the thirties, Grand Forks had a severe water problem. Sewage began

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<sup>87</sup>Ibid., pp. 74-76.

<sup>88</sup>J.W. Wilkerson to Dean L.C. Harrington, 17 February 1938, "Community Improvement Appraisal," Box 31, Folder 3, Works Progress Administration, 1935-1941, College of Engineering Papers, Chester Fritz Library, University of North Dakota, Grand Forks, North Dakota.

flowing into the river and drinking water acquired an obnoxious taste and odor. Activated carbon was manufactured at the University and was used to remove the unpleasant properties.<sup>89</sup> The School of Mines also experimented with the drying of lignite in order to make it a more stable product for long distance travel. Through three projects authorized by the W.P.A., Budge developed and operated various types of rotary dryers and other equipment for drying the soft coal. Professor Budge also supervised a W.P.A. project in which lignite and various other fuels from the University Power Plant were sampled and analyzed to determine their heating value. Budge stated in his report that the tests would be of future value in connection with lignite purchases.<sup>90</sup>

Not all of the projects were experimental in nature. The F.E.R.A. and the W.P.A. each sponsored a statewide survey of all producing lignite mines. In August, 1934, the F.E.R.A. and Dean Harrington sent surveying parties into the coal field and by October of the same year, the investigators had compiled surveys on 240 coal mines. The survey included over forty questions concerning the location and ownership of the mine, the characteristics of the deposit and the overburden, the type of mining used, equipment, labor relations and production. The field investigators also secured

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<sup>89</sup>A.M. Cooley, Professor Emeritus, Chemical Engineering, Grand Forks, North Dakota, Telephone Interview, 23 May 1978.

<sup>90</sup>Dean L. C. Harrington Correspondence, "Report on the Activation of Lignite, January 21, 1935-October, 1935," "Report on the Activation of Lignite, January 15, 1936-September 25, 1936," "Report on Sampling and Analyses of Fuels, November 26, 1936-June 10, 1937," "Report on Activation of Lignite, October 6, 1936-November 10, 1937," Box 31, Folder 3, Works Progress Administration, 1935-1941, College of Engineering Papers.

samples of lignite from each of the mines. The samples were tested for their heat value and moisture content. The results of the analyses indicated which mines had a better quality lignite. The overall value of the project, besides employment for relief clients, was the discovery of those high grade coal mines in relation to fuel expenditures.<sup>91</sup>

In late 1935, Dean Harrington began the second lignite survey. Once again research teams entered the western region and gathered information as to the production level and quality of the lignite seams. The study also included statistics on the sales of lignite and other fuels in the major cities of the state.<sup>92</sup> The last project dealt with the utilization of lignite. A study was made of those domestic and semi-commercial heating plants in the eastern part of the state not using bituminous coal. Dean Harrington conducted numerous demonstrations on the adaptation of boiler equipment to the use of the brown coal and on the proper methods of handling it. The benefits of the project were permanent according to Harrington, "since the people were made 'lignite conscious'."<sup>93</sup>

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<sup>91</sup>Dean L.C. Harrington, "Progress Report of Lignite Survey and Investigation Under the Federal Emergency Relief Administration, Project S-F2-56," Records of the School of Mines, College of Engineering, Engineering Library, University of North Dakota, Grand Forks, North Dakota.

<sup>92</sup>"Sampling of North Dakota's Lignite Producing Mines," Records of the School of Mines, College of Engineering; Dean L.C. Harrington Correspondence, "Report on the Survey and Sampling of All Producing Mines," Box 31, Folder 3, Works Progress Administration, 1935-1941, College of Engineering Papers.

<sup>93</sup>Dean L.C. Harrington Correspondence, "Federal Emergency Relief Administration Supports Investigations of North Dakota's Mineral Resources," Box 23, Folder 24, North Dakota Engineer, 1934-1935, College of Engineering Papers.

The federal projects proved to be constructive not only in relation to the results of the experiments and the statistical information gathered through the surveys but also for the employment they provided for many individuals. The federal government, along with the state agencies, contributed over \$96,000 to the coal projects. The majority of the funds was spent on salaries. The work provided by the federal government was highly commended by Dean Harrington in a rather light-hearted article he submitted to the North Dakota Engineer in 1935.

Although it has been said that engineers are the happiest of God's creatures, in this highly industrialized country, there has been little improvement in industrial activities to stimulate his natural cheerful disposition during the past year.

However, to North Dakota engineers, funds appropriated by the federal government for state relief under federal acts of various forms proved to be a God send during a period when jobs in industry were still at a premium. Technical graduates and common laborers graciously accepted those opportunities for work made possible by a benevolent government.<sup>94</sup>

The state government was not quite as benevolent as Washington concerning coal and people. Besides contributing to the financial operation of the federal projects, the state government's only major coal program was the opening of state lands for mining by relief clients. The Board of University and School Lands approved the project through the County Welfare Boards for digging the coal. The

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<sup>94</sup>Dean L.C. Harrington Correspondence, "Report on Lignite Utilization," Box 31, Folder 3, Works Progress Administration, 1935-1941, College of Engineering Papers.

project reduced considerably the fuel expenditures of the County Welfare Boards.<sup>95</sup>

Most of the relief related coal projects were conducted on the community level. An example of community spirit and cooperation during the depression was the Unemployed Citizens League of Minot. In the summer of 1932, a group of approximately one hundred unemployed men decided to band together ". . . to see just what they could do." Meetings were held in the Ward County Courthouse to discuss the economic predicament and to suggest possible solutions. The outcome of the conferences was the Unemployed Citizens League, a communal enterprise determined to sustain life during those indeterminate times. The League quickly gained popularity for the readiness of its members:

. . . to go out and take any honest job at almost any price in order to get food, clothing and fuel. Some of them picked up odd jobs around town. When the October snow storm came, it proved a blessing to them, for many of the members of the league got a few days' work shoveling snow off the sidewalks and the streets.

Early in the fall, many of them went out onto the farms and dug potatoes on shares. Some of them helped in the harvest and threshing and they took their pay in cattle, hogs, poultry, butter, eggs, vegetables, etc.<sup>96</sup>

The members of the League also acquired the use of a slaughter house and a sausage factory in order to process their "wages." There they slaughtered their cattle and hogs, processed the small herd and sold the sausage, hamburger and special cuts to their comrades. With a lack of legal tender, the League had to devise a medium of exchange. Old checks from a closed bank served as paper money or scrip. The

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<sup>95</sup>First Biennial Report of the Public Welfare Board of North Dakota For the Biennial Period Ending June 30, 1936, (n.p., n.d.), p. 25.

<sup>96</sup>"Unemployed Citizens League Operates Coal Mine Near Minot With No Expense," Ward County Independent, 1 December 1932, p. 1.

League issued the scrip at a credit rate of \$.25 per hour to each employed individual. The members used the scrip to pay for food, clothing and fuel at a price established by the League's directors.

The most notable accomplishment of the Unemployed Citizens League was the opening of a coal mine. In the early fall of 1932, the League leased a thirty-five acre section of rolling land in the Mouse River Valley, six miles northwest of Minot. The directors of the League ". . . didn't know a thing about opening a coal mine but they did know where to go to get the work done for nothing . . ." <sup>97</sup> They secured the expertise of the Assistant City Engineer who surveyed the mine at no cost. Rodney Hunnewell, the owner of the leased section, sunk several test holes and eventually struck a seam twelve feet thick. Hunnewell not only performed the preliminary tests, but also supplied the League with much of the needed equipment to work the mine. <sup>98</sup>

With a fairly thick bed of coal, the essential equipment and a small army of diligent and somewhat experienced coal miners, work began on the drift style mine in late October. Three shifts labored continuously on a declivitous tunnel which eventually reached over 200 feet into the terrain. Tracks were laid into the shaft, wooden beams were lodged along the walls of the tunnel for support, and a screening system was placed in a nearby abandoned tippie. The discovery of an old coal car proved to be a valuable find; it was subsequently hitched to two borrowed mules. The members dug a well to supply adequate water and built a barn to house their rented horse power. They also secured the use of

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<sup>97</sup>Ibid., pp. 1, 4.

<sup>98</sup>Ibid., p. 4.



a cook car and a local physician supplied them with medical aid. By Thanksgiving, the League miners had excavated their first wagon load of lignite and it ". . . proved to be choice, dry coal, as hard as flint."<sup>99</sup> It was sold to nearby farmers and to League members at \$1.60 per long ton (2200 lbs.). The miners received wages in both scrip and cash and were paid according to the number of tons mined per day.<sup>100</sup>

The Unemployed Citizens League was a gallant venture. The members waged quite a successful battle against the depression. Their progress and accomplishments were recorded in the Ward County Independent. In December, just after the mine had reached a productive scale a reporter from the newspaper stated enthusiastically:

Minot has watched with satisfaction and great interest the progress that is being made by the members of the Unemployed Citizens League of this city . . .

Instead of shedding tears over the situation they found themselves in, they began to look for some way out.

The Minot correspondent also commented on the coal mine and seemed to be quite proud of the League's enterprise.

. . . this group of earnest, energetic, far-seeing men have [sic] managed without the expenditure of one red cent, to acquire valuable property and open a valuable coal mine without one cent of outlay to date. [Their mine is] . . . an accomplishment [that] I doubt has been equaled anywhere else in the United States by a group of the unemployed.<sup>101</sup>

There were many other community projects such as Minot's Unemployed Citizens League. In Burke County near Columbus, William Durick organized a farmers cooperative coal mine. With insufficient money to purchase coal from the "big mines," the farmers decided to strip mine a

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<sup>99</sup>"Unemployed Citizens League," Ward County Independent, p. 4.

<sup>100</sup>Ibid.

<sup>101</sup>Ibid., p. 1.

section of land north of the city. Plows, fresnoes and four horses removed the overburden and excavated the lignite. The members of the cooperative worked at the mine in proportion to the amount of fuel needed.<sup>102</sup> Coal Mine Lake Mine was another operation opened during the thirties. It was located three miles east of the Sheridan-Wells County line on the western edge of Coal Mine Lake. It was an active mine during intermittent periods of depression and drought since the early 1890's. During the depressed conditions of the 1930's, Daniel Bick, a resident of Harvey, reopened the structure. There, Bick and other citizens of Harvey secured their winter's supply of fuel, and many considered it "very poor stuff." People living in Sheridan County also traveled east to mine lignite at Coal Mine Lake.<sup>103</sup>

Many communities throughout the state had similar accounts of cooperative coal ventures, but the story of Wilton during the depression was unique. Wilton's economy was based on coal and its people were coal miners. When the Truax-Traer Coal Company leased the mine in 1930, over 200 miners were laid off, for the stripping operation required much less manpower. The switch to surface mining and the subsequent loss of jobs coupled with the Great Depression that was tightening its hold upon the country, was quite disastrous for Wilton. Some of the unemployed miners, who had formerly been farmers, decided to return to the agricultural world. Others stayed with the only work they knew and opened several small underground mines within the Wilton

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<sup>102</sup>Burke County and White Earth Historical Society, 1971, (Bismarck: Quality Printing Service, 1972), p. 906.

<sup>103</sup>"Coal Mine Lake Mine Was Reopened During the Depression Years," Wells County History, 6(May 1, 1976): 5.

area.<sup>104</sup> Some of the mines included the Asplund, Holden, Engstrom, Fosberg, Coleman, Chubey, Ferrick, Diamond, and Lind Brothers.<sup>105</sup> Still other jobless miners choose to return to work at Truax-Traer even though the surplus supply of labor had forced wages downward. Eventually economic hardship led the unemployed miners into presenting a resolution to the Wilton City Commission in February, 1937. The proposal called for a severance tax on all strip and machine mined coal at a rate of \$.50 per ton. The miners requested the commission to forward their resolution to the state legislature for approval by that body. The efforts of the jobless miners to provide relief proved to be inconsequential; the resolution never reached the state legislature.<sup>106</sup>

If there were citizens leagues, farmers cooperatives and special resolutions designed to combat the depression there were also special individuals who attempted to ease the second class existence of their neighbors. Such an exceptional individual was Roy Bonsness, a coal dealer from Columbus. During the 1930's he operated the Bonsness Coal Mine, and sold the shiny lignite within the local market. In a history of Burke County, written in 1971, one of the many authors discussed the hard luck stories, the good times and the matchless happenings characteristic of a small town during the dreadful decade. The author also spent a paragraph praising the coal merchant's benevolence.

. . . during the depression. . . there were many families in town as well as in the country or rural areas that were 'hard up' as

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<sup>104</sup>Wold, "The Washburn Lignite Coal Company," pp. 18-19.

<sup>105</sup>State Mine Inspector's Report, 1932, p. 9; State Mine Inspector's Report, 1935, 1935, p. 11.

<sup>106</sup>Wold, "The Washburn Lignite Coal Company," p. 19.

you would say and had very limited means. For these there would have been many cold nights during the winters without coal and many a Christmas Eve would have been very meager, both in food and toys. But through the great generosity of Roy Bonsness, many of these needs were met. Roy would have his men deliver coal to those families without pay. And on Christmas Eve he would come to town to purchase boxes and boxes of groceries as well as toys and he would then play 'Santa Claus' and bring this to needy families. He also donated coal to churches during the depression years as in those days the churches were also in need. Roy continued this for years.<sup>107</sup>

The depression sent the economy of the nation, the state, and to a lesser extent, the lignite industry into a period of turbulence and change, but as the decade drew to a close, the United States, along with North Dakota, entered an era of global conflict which eventually caused a sweeping metamorphosis of the world. The state's coal industry also entered a time of change in 1941, and like World War II, the causes of the event were grounded in the past. Furthermore, the forces or causes of this change were somewhat camouflaged. A superficial observation of the industry from 1939 to 1941 showed that coal production increased, technology maintained its mechanization of mining procedures and the largest lignite enterprises grew. Hidden within that apparent onward march of the industry, however, were two formidable opponents of lignite, and they aimed to command the fuel market in due time. The two rival fuels, natural gas and fuel oil, made their advances slowly, but eventually they forced a reversal on the coal industry in 1941 and it marked the onset in the decline in the number of active lignite mines and the sure journey of the brown coal into another type of market.

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<sup>107</sup>Burke County, p. 907.

Natural gas was another subterranean resource native to North Dakota. In 1925, Dr. A. G. Leonard, the State Geologist, recounted the development of natural gas from one of its earliest discoveries in 1907. Leonard also reported on the number of active and potentially productive wells in the state. In Williams County near Williston, natural gas was discovered at a depth of 750 feet. A large number of wells were reported in Renville County west of Mohall. Ward County also contained natural gas pools as did Bottineau and LaMoure Counties.<sup>108</sup> By 1930, natural gas had threatened the lignite market. As the state coal mine inspector announced:

The introduction of Natural Gas has caused a noticeable decrease in the consumption of coal in western North Dakota. Pipe lines have been laid and extended into the very heart of the lignite fields . . . <sup>109</sup>

As time passed, the production and consumption of natural gas in North Dakota and throughout the nation increased. The production of gas in North Dakota was rather low, however, and most of the gas consumed was imported. Table 15 outlines the rise in consumption.

The anticlines of North Dakota held another precious cargo, petroleum, and its residue fuel oil became another contending source of heat energy. During the 1920-1941 period, North Dakota produced very little commercial oil. In fact, the petroleum industry did not graduate from the prospecting stage until 1938, when a number of the nation's major oil companies began drilling operations in the western

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<sup>108</sup>Dr. A. G. Leonard, "The possibilities of Oil and Gas in North Dakota," North Dakota Engineer 2(November, 1925): 12-13.

<sup>109</sup>State Mine Inspector's Report, 1930, p. 5.

TABLE 15

NATURAL GAS CONSUMED IN THE UNITED STATES  
AND IN NORTH DAKOTA, 1934-1941

Year	United States Total (Millions of Cubic feet)	North Dakota Total (Millions of Cubic feet)
1934	1,764,988	1,112
1935	1,909,901	1,382
1936	2,160,518	1,578
1937	2,403,041	1,641
1938 <sup>a</sup>	2,294,097	1,533
1939	2,473,765	1,607
1940	2,654,659	1,725
1941	2,805,192	1,741

SOURCE: U.S., Department of the Interior, Bureau of Mines, Minerals Yearbook, 1939, (Washington, D.C.: Government Printing Office, 1939), pp. 1040-43; U.S., Department of the Interior, Bureau of Mines, Minerals Yearbook, 1942, (Washington, D.C.: Government Printing Office, 1943), p. 1150.

<sup>a</sup>The decrease in 1938 was due to unusually warm weather during the months of heavy gas consumption and depressed business conditions during the first three quarters of 1938.

section of the state.<sup>110</sup> Although North Dakota did not produce fuel oil, the number of barrels imported rose steadily and rapidly. Table 16 indicates the rise in fuel oil consumption through the number of barrels sold each year in North Dakota and in the United States.

The year 1941 was a turning point in the history of the coal industry. It was the beginning of a long, steady decline in the number of active mines. The number dropped from an unprecedented high of 320 in 1940 to 296 in 1941, a decrease of seven percent.<sup>111</sup> All

<sup>110</sup>Dr. Wilson M. Laird, "Oil in North Dakota," North Dakota Engineer 24(November, 1948): 6-7.

<sup>111</sup>Twenty-Second Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1940, (n.p., 1940), pp. 8-17; State Mine Inspector's Report, 1941, pp. 8-17.

TABLE 16  
 SALES OF FUEL OIL IN THE UNITED STATES  
 AND IN NORTH DAKOTA, 1934-1941

Year	United States Total (Thousands of Barrels)	North Dakota Total (Thousands of Barrels)
1934	330,321	199
1935	365,985	269
1936	408,409	294
1937	441,803	416
1938 <sup>a</sup>	407,850	442
1939	456,943	594
1940	498,758	647
1941	554,329	677

SOURCE: U.S., Department of the Interior, Bureau of Mines, Minerals Yearbook, 1939, (Washington, D.C.; Government Printing Office, 1939), p. 931; U.S., Department of the Interior, Bureau of Mines, Minerals Yearbook, 1940, (Washington, D.C.: Government Printing Office, 1940), pp. 1017-18; U.S., Department of the Interior, Bureau of Mines, Minerals Yearbook, 1942, (Washington, D.C.: Government Printing Office, 1943), p. 1106.

<sup>a</sup>The decrease in 1938 was due to mild weather during the first and fourth quarters and to depressed economic conditions.

of the mines closed in 1941 were small operations that served local area residents and businesses. The consumption of lignite by this population had declined to a point where the local mines could not maintain a profit margin. The invasion of natural gas and fuel oil into this market forced the decline.

As the consumption of these two fuels increased, the utilization of lignite changed from that of a domestic and commercial heater to a catalyst in the manufacture of electrical power. Indications of this change were evident throughout this period. Near a number of the state's largest mines, power companies established electrical generating plants. At the Knife River Coal Company, the Hughes Electric Company erected a generating plant in 1925. In 1927, the Otter Tail Power Company constructed a steam generation plant near Washburn for the

manufacture of electricity and coal from the Washburn Lignite Coal Company supplied the necessary heat. Montana-Dakota Utilities located a power plant near the Truax-Traer Kincaid mine in 1928.<sup>112</sup> By 1941, the amount of lignite used in North Dakota for the production of electrical energy was significant. Figures for this amount are unavailable. However, in the nation as a whole, thirty percent of the total production was used in the generation of electric energy and North Dakota produced eighty-three percent of the total tonnage.<sup>113</sup>

When the steam shovel first stirred the North Dakota soil, a new, technological harvest of the subterranean resource began and the industry met changing times. Before the end of the twenties, strip mining had demonstrated its superiority. Underground mining, although displaced, had still maintained a major following. Technology forced the change in 1920. In 1930 the nation's depressed economy was the instrument of change and it left the lignite industry with recurrent decreases in production and a steady decline in the coal price. The industry did not sustain irreparable harm during the Great Depression, in fact, the coal projects funded by the federal government proved to be quite beneficial for the state and the industry. The community projects were most worthy for those in need and demonstrated an admirable spirit of cooperation among the participants. Hidden within this twenty-one year period was another force of change and it finally surfaced in 1941. Competition in the form of natural gas and fuel oil began to drive lignite

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<sup>112</sup>North Dakota: A Guide to the Northern Prairie State, (Fargo: Knight Printing Company, 1938), p. 242.

<sup>113</sup>U.S., Department of the Interior, Bureau of Mines, Minerals Yearbook, 1942, (Washington, D.C.: Government Printing Office, 1943), p. 904.



out of the fuel consumption market and many of the local mines could no longer afford to remain open. Paralleling the rise in the competitor fuels was the growth in the use of lignite in the manufacture of electrical power. By 1941, this growth, coupled with the onset of the decline in active mines, had launched the lignite industry on a new course which led to the modern industrial era.

## CHAPTER V

### NORTH DAKOTA COAL SINCE 1941

#### Uncertainty, Arrival of the Energy Industry and the Ensuing Controversy

Throughout the history of the lignite industry, people have attached various meanings to the brown coal. Their connotations collectively have imparted a greater understanding of the coal and its effects upon North Dakota's economy. To the frontiersman lignite was often an object of only momentary interest recorded briefly, if at all, in log books and diaries. To the settler it was a means of survival when the notorious North Dakota blizzards struck and it was another source of income for farmers unemployed during the winter months. For the upstart capitalists of the young state, the coal was a new investment venture viewed in terms of future wealth. To the coal miner lignite was his livelihood and at times, an unstable one. For the railroad commissioners it appeared to be an unrelenting controversy. For a chemistry professor and a college dean it offered a lifetime of investigative research. To drought sufferers and to those who lived through the Great Depression, coal was an inexpensive item, if not free for the taking. For presidents of public utilities it offered a cheap fuel source well suited for firing electrical generators.

Lignite has had a countless number of meanings attached to it, but the prevailing thought in the minds of many throughout the entire

history of the industry was the belief that lignite would make North Dakota an industrialized state. The low cost coal would bring people, factories and progress. The end product would be a diversified economy, one no longer dependent upon an unstable agricultural base. The future would not be wheat, it would be coal. This was a pervading theme in the history of coal development, but it was always colored with the spirit of anticipation.<sup>1</sup> The idea that lignite would make the state an industrial center could be found in a doctor's diary in 1867, in booster magazines in 1885, on the front page of newspapers in 1900, in coal mining journals in 1925, and in prideful histories of counties and small towns written in observance of silver anniversaries and golden jubilees.

In 1941, the lignite industry was on the threshold of a new era, but from that point in time until about 1960, the course of the industry was in fact somewhat obscure. (Although sixty-five percent of the coal was being used to fire electrical generators by 1948, the state's leaders, at that time, believed that power generation was not lignite's future.) The coal was more valuable as a chemical raw material. The conversion of lignite into synthetic gases, liquid fuels, waxes, tar

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<sup>1</sup>A good example of this anticipation or future benefit associated with coal development is found in an article in North Dakota Magazine. In speaking of Ward County, the author stated: "The day will come, and the children are now living within the county that will see it, when the glory of the county will not be flax nor wheat nor any of those things which pertain to the product of the farm, splendid as they are, but it will be coal, and the direct and indirect products of its consumption through the efforts and skill of American artisans employed in shop and factory and furnace." See "Coal in Ward County," North Dakota Magazine 1(December 1906): 60.

products, fertilizers and plastics was the predicted utilization.<sup>2</sup> As early as 1943, the state government created the North Dakota Research Foundation, designed to investigate the chemical properties of lignite and to determine the feasibility of conversion. In the following year, the United States Bureau of Mines established a gasification pilot plant at the University of North Dakota where scientists began to experiment on the possibility of converting lignite into natural gas, octane gasoline and using it as a reducing agent in the production of iron ore. In 1951 the Bureau of Mines constructed another research facility at the University, the Charles R. Robertson Lignite Laboratory.<sup>3</sup>

As the research sector increased its knowledge of the brown coal's chemistry, the industry itself was actually declining in respect to active mines and productivity. In 1941, the number of active mines began to decrease and by 1950, there were only one hundred left in operation. By 1965, there were only thirty-eight. The mine inspection reports indicated that production increased to a high of 3,280,847 tons in 1951 and then declined to 2,325,545 tons in 1958.<sup>4</sup> Fluctuations in

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<sup>2</sup>Alex C. Burr, "The Future of Lignite," North Dakota Engineer 23(January 1948): 9-10.

<sup>3</sup>Burr, "Future of Lignite," p. 10; Elwyn B. Robinson, History of North Dakota, (Lincoln: University of Nebraska Press, 1966), pp. 454, 502.

<sup>4</sup>Thirty-Second Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1950, (n.p., 1950), pp. 10-14; Second Biennial Report of the Coal Mine Inspection Department of the State of North Dakota, July 1, 1964-June 30, 1966, (n.p., n. d.), pp. 10-11; Thirty-Third Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1951, (n.p., 1951), p. 8; Fortieth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1958, (n.p., 1958), p. 7.

the tonnage record continued until 1966.<sup>5</sup> The factors responsible for the decline were of course, oil and natural gas, but also the inability of small mine owners to compete with the giant coal firms. Furthermore, the installation of hydroelectric power at Garrison Dam in 1956<sup>6</sup> had an effect upon the industry. The discovery of productive oil wells near Williston also affected coal production. The importance of lignite as a market commodity appeared to be diminishing in proportion to the growth in imported and home produced oil.

In 1957 the haze of uncertainty surrounding the lignite industry began to lift and the state's leaders reiterated the value of lignite. The North Dakota Economic Development Commission replaced the North Dakota Research Foundation and the interest in lignite switched from that of research to promotion as a cheap industrial fuel.<sup>7</sup> In 1962, the members of the Democratic State Convention praised Governor William L. Guy for his efforts to accelerate the use of lignite in the generation of thermal energy. The Democratic State Platform proclaimed in colorful language that North Dakota would become the "power hub of the nation."<sup>8</sup>

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<sup>5</sup>Forty-First Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1959, (n.p., 1959), p. 7; Forty-Second Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1960, (n.p., 1960), p. 7; Forty-Third Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1961, (n.p., 1961), p. 6; Forty-Fourth Annual Report of the Coal Mine Inspection Department of the State of North Dakota, 1962, (n.p., 1962), p. 7; First Biennial Report of the Coal Mine Inspection Department of the State of North Dakota, July 1, 1962-June 30, 1964, (n.p., n.d.), p. 6; State Mine Inspector's Report, 1964-1966, p. 6.

<sup>6</sup>Robinson, History of North Dakota, p. 463

<sup>7</sup>Ibid., p. 454.

<sup>8</sup>"Coal Perspective," Grand Forks Herald, 5 April 1977, sec. A, p. 4.

Furthermore, it was evident by the early sixties that the electrical demands of the state could not be met by the hydroelectric plants at Garrison Dam.<sup>9</sup> It was also quite clear to the leaders of the state as well as the nation that the supplies of oil and natural gas were indeed limited. So the nation turned to its coal reserves and the state to its lignite. Accordingly, in 1963, the first significant coal fired generating station began operations. The plant was built by Basin Electric Power Cooperative, a consortium of energy cooperatives and was located near the plentiful water supply of Lake Sakakawea.<sup>10</sup>

Today, there are eight of these plants in the state. Basin Electric has a two unit plant known as Leland Olds at Stanton in Mercer County. The annual energy production of the two units is 4.5 billion kilowatt hours (KWH). Basin Electric also has a small plant, the Neal Station, at Velva in Ward County. The Neal Station has a generating capacity of .192 billion KWH per year. The Franklin P. Wood Plant at Grand Forks and the Milton R. Young Station at Center, Oliver County are owned by Minnkota Power Cooperative. The combined annual KWH production of the two plants is 1.95 billion. Minnkota Power also owns the new Square Butte Creek Station, also at Center. This station generates three billion KWH per year. United Power Association has a plant at Stanton and its annual generating capacity runs 1.2 billion. The Heskett and Beulah power stations at Beulah are owned by Montana-Dakota Utilities

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<sup>9</sup>Robert P. Wilkins and Wynona H. Wilkins, North Dakota: A History, (New York: W. W. Norton & Company, Inc., 1977), p. 184.

<sup>10</sup>Mike Jacobs, One Time Harvest, (Jamestown: North Dakota Farmers Union, 1975), p. 60.

and produce a relatively small amount of electrical energy, .732 billion KWH.<sup>11</sup>

Besides the active plants, there are presently three stations under construction. United Power is building a two unit plant known as the Coal Creek Station near Underwood in Mercer County. It will have an aggregate capacity of six billion KWH. Southwest of Beulah, construction is progressing on the Coyote Station, which is being financed by a group of power companies, including Minnkota, Otter-Tail Power Company, MN Power and Light, Montana-Dakota and Northwestern Public Company. The third plant in the construction phase is located north of Beulah and is being built by Basin Electric. Both the Coyote and the Basin Electric plants will have an annual capacity of three billion KWH and will be operational by 1981.<sup>12</sup> There are also proposals for the construction of additional units to existing facilities. Plans are being formulated to add a second unit to the Coyote Station and the addition will double the yearly capacity. Basin Electric also has designs for a second unit at their Beulah station. The construction of a coal gasification plant near Beulah has been proposed by American Natural Gas. Natural Gas Pipeline Company of America has also considered the building of a gasification plant at Dunn Center, Dunn County.<sup>13</sup>

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<sup>11</sup>Edward Englerth, Director of Reclamation and Plant Siting Division, Public Service Commission, Bismarck, North Dakota personal communication, 28 June 1978; Energy Development in North Dakota, [a pamphlet issued by Minnkota Power Cooperative, Inc., 1822 Mill Road, Grand Forks, North Dakota] pp. 2-4.

<sup>12</sup>Maureen K. Gerl-Knapp, Administrative Secretary, Coal Development Impact Office, Bismarck, North Dakota, personal communication, 28 June 1978.

<sup>13</sup>U.S., Department of the Interior, Bureau of Land Management and the State of North Dakota, Summary of Draft West-Central North Dakota Regional Environmental Impact Study on Energy Development, March, 1978, pp. 2-6.

With the installation of electrical generation plants, lignite was well on its way to becoming the number one catalyst in the manufacture of thermal power. The production of coal multiplied. In the short four year period from 1966 to 1970, the amount of lignite mined rose from 3,067,119 tons to 5,001,828 tons. In 1975 it reached over seven million tons.<sup>14</sup> By the time the generation plants that are presently under construction are operational (1981), the production level will exceed twenty million.<sup>15</sup> If the proposed gasification and generation plants are built, the amount of lignite consumed will increase by approximately twenty-eight million tons.<sup>16</sup>

The arrival of the energy industry in North Dakota was regarded by many with skepticism and fear. As the power companies launched their energy campaign near the plentiful coal fields and vast water supplies in Mercer, McLean and Oliver counties, an opposing faction of environmentalists, reclamationists and concerned North Dakotans began to question the effects of this alien enterprise. The amount of coal needed to fire the generating plants would require strip mining on a mammoth scale. Thousands of acres of land would meet the bite of giant shovels and draglines, instruments of modern technology capable of crumbling the earth in a highly efficient manner. Would the land ever be agriculturally

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<sup>14</sup>State Mine Inspector's Report, 1964-1966, p. 6; Fourth Biennial Report of the Coal Mine Inspection Department for the State of North Dakota, July 1, 1968-June 30, 1970, (n.p., n.d.), p. 5; North Dakota Annual Coal Mine Report, July 1, 1974-June 30, 1975, (n.p., n.d.), p. 1.

<sup>15</sup>The figure was calculated from information found in "Energy Development in North Dakota," pp. 2-4.

<sup>16</sup>The figure was calculated from information found in U.S., Department of the Interior, Summary of Draft West-Central North Dakota Impact Study, pp. 2-6.



productive again? Could it be restored to its original condition? Who would finance the necessary reclamation? These were complicated questions that demanded answers and they led to other inquiring statements. The construction of the power stations would require thousands of workers. What kind of impact would this population influx have on the school districts, housing facilities and public utilities in the coal mining counties and towns? Should not the mining industry be taxed for removing the coal? How many acre feet of North Dakota water could the state allow the gasification plants to use in direct relation to agricultural needs? What about air quality standards? How will the statewide system of high voltage wires required to carry the electricity to the metropolitan areas affect agriculture and wildlife? How will it alter the quality of life in North Dakota? Endlessly came the questions and endlessly came differing answers. One point, however, was clear, the state needed an energy policy.

In 1967, the state legislature took the first step in the creation of an energy policy. On February 21, 1967 the assembly passed a resolution directing the Legislative Research Committee to investigate the need for reclamation, to prepare a cost-benefit analysis thereof and to recommend appropriate legislation.<sup>17</sup> In accordance with the findings of the committee, the legislature passed a reclamation bill in 1969. The act provided for reclamation of surface mined areas to "encourage" productive usage. The bill outlined the responsibilities of surface mining operators in reclaiming disturbed lands and carried a penalty for non-compliance. This, the first reclamation bill, became law on July 1,

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<sup>17</sup>Laws Passed at the Fortieth Session of the Legislative Assembly of the State of North Dakota, 1967, (n.p., 1967), pp. 1261-63.

1969,<sup>18</sup> and it indicated the lack of a scientific understanding of the reclamation process. Public clamor soon forced the legislature to amend the law. During the 1971 and 1973 sessions, the state's leaders strengthened the policy, but only in minor areas<sup>19</sup> that were unrelated to the basic issue, the technical rehabilitation of strip mined lands. With additional research and a deeper insight into the technology of reclamation, the lawmakers began to take a scientific approach to the problem.

In 1975, the legislature made significant changes in the law. Section three of the new bill required strip mine operators to submit a survey of the soil material of overlying areas of planned coal development. The survey was to be conducted by a professional soil classifier and was to include hydrologic data together with maps concerning the geology, topography and soils of the affected lands. Another amendment required the operators to save, segregate and respread the topsoil according to an accepted reclamation plan. The state legislature also restricted surface mining to those areas which could be reclaimed. Lands classified as impossible to reclaim would not be subject to surface mining operations.<sup>20</sup> These amendments to the Reclamation Law provided for a more scientific and systematic order in land rehabilitation.

If reclamation did not consume the time and energy of the state's lawmakers, the coal severance tax issue did. Attempts to enact such a tax had been made prior to the present decade, but success did not come

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<sup>18</sup>Laws Passed at the Forty-First Session of the Legislative Assembly of the State of North Dakota, 1969, (n.p., 1969), pp. 677, 680-85.

<sup>19</sup>Jacobs, One Time Harvest, p. 130.

<sup>20</sup>Laws Passed at the Forty-Fourth Session of the Legislative Assembly of the State of North Dakota, 1975, 2 vols., (n.p., 1975), vol. 2, pp. 905-910.

until 1975. At the Forty-Fourth Legislative Assembly, several tax proposals were advanced and the subsequent controversy became a "great sideshow."<sup>21</sup> In the end, the tax plan of the Republican majority in the Senate prevailed. The tax was set at a flat rate of fifty cents per ton. Attached to the rate was an escalator clause which increased the tax by one cent per three point increase in the Wholesale Price Index. The revenue accrued through the severance tax was allocated to various government agencies. Thirty-five percent was placed in a special fund in the state treasury for distribution by the coal development impact office through grants to impacted counties, cities, school districts, and other sectors. Thirty percent was credited to a trust fund in the state treasury for administration by the Board of University and School Lands as loans to impacted areas. The board was also authorized to invest the money with any income going to the state's general fund. The coal impact counties received five percent of the revenue and the remaining thirty percent was deposited in the state's general fund. The provisions of the act were effective for the period July 1, 1975 to June 30, 1977.<sup>22</sup> Since the tax was valid for only a two year period, the lawmakers would either reenact or change it during the 1977 legislative session.

As the legislators gathered in Bismarck in early January, 1977, the prevailing attitude was that the severance tax would become a bitter controversy. This prediction was certainly accurate. The Democrats proposed several tax plans based on a percentage of the coal price. The Republicans again favored a flat rate tax with an escalator clause. As

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<sup>21</sup>Jacobs, One Time Harvest, p. 218.

<sup>22</sup>Laws Forty-Fourth Session, 1975, vol. 2, pp. 1476, 1479-1481.

the session neared adjournment, the idea of compromise appeared impossible. Tax committee members wrestled with the complicated issue, partisan tonguelashings increased, and according to the press, ". . . the senators spent hours arguing about whether they should continue to argue."<sup>23</sup> Eventually, the severance tax was set at a flat rate of sixty-five cents per ton with a graduated increase of one cent per one point increase in the Wholesale Price Index. The bill also changed the allocation of the tax revenue. Thirty-five percent was credited to the state treasury for impact grants. The Board of University and School Lands received fifteen percent for loans to impacted areas and for investment purposes. Twenty percent of the revenue was allocated to the coal producing counties, and thirty percent was placed in the state's general fund.<sup>24</sup>

The state legislature has tackled many problems associated with coal development and the energy industry. Today the state has basic policy statements which have a regulating influence over this development. The central issue, however, remains to be solved, for some of the state's lawmakers suspect that the policy statements are not strong enough to control the impending development of the coal resources. Perhaps the best illustration of this skepticism in relation to the scope of the issue is found in an address delivered by Representative Rick Maixner to the legislative assembly during the early morning hours of April 7, 1977.

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<sup>23</sup>"Chaotic Legislature Won't Compromise," Grand Forks Herald, 7 April 1977, sec. A, p. 1.

<sup>24</sup>Laws Passed at the Forty-Fifth Session of the Legislative Assembly of the State of North Dakota, 1977, 2 vols., (n.p., 1977), vol. 2, pp. 1186, 1189-90.

He stated:

Regrets have been expressed because the severance tax has become a partisan issue. In the vernacular of analysts, this has become a win-lose confrontation. No, the confrontation is not really between the Republicans and Democrats, not really between House and Senate. The real confrontation is between the energy industry and the people of North Dakota.

My family has spent three generations in this country, three generations in North Dakota, and like thousands of other farm families in North Dakota, has spent three generations being colonized by outside interests. The railroads, the bankers, and the grain merchants have each had their day. Today we are faced with colonization once again. The Senate stands fast-firmly behind a severance tax that was conceived, born and promoted by the energy industry. Yes, sad to say, this is a win-lose issue.

If the Senate wins, if the energy industry prevails, the people of North Dakota will lose for the third time in as many generations. We will have once again bowed to the pressure of outside interests and outside money.<sup>25</sup>

Aside from the political overtones, Maixner presented the first of two issues of great concern, the possible colonization of North Dakota by the energy industry. There is the fear that the destiny of the state's coal resources may be too controlled by outside interests. North Dakotans have yearned for industry since statehood, but many feel that instead of diversifying the economy, the energy industry may perpetuate the state's colonial status. These critics note that North Dakota has always been a colony to the nation, a satellite to the metropolises. It has always been dependent upon the industrialized sector of the nation for manufactured goods and services. This status may not change with the advent of massive coal development, for much of North Dakota's lignite is owned by outside interests including both the federal and state governments, the Burlington Northern Railroad, the Federal Land Bank, and a host of major development corporations.<sup>26</sup> North

<sup>25</sup>North Dakota House of Representatives, "A Bill for an Act to Provide for a Severance Tax Upon All Coal Mined," 45th Legislative Assembly, 1977, Journal, 7 April 1977, pp. 1947-48.

<sup>26</sup>Jacobs, One Time Harvest, p. 137.

Dakota firms do not have the technology nor the finances necessary to expand the use of coal, but the energy industry has that ability, and it is composed of outside interests.

Aside from the matter of colonization, the second issue of concern for North Dakota is the impact of coal development upon the state. Certain projections indicate that coal development will have a significant impact upon the socio-economic structure and upon the environment. The economy will be stimulated for a significant period of time. For the counties and cities in the coal area, the development will generate new business activity, particularly in the construction, retail trade, and service sectors. Employment will increase as well as personal income levels. There will be a rapid population growth in the coal counties and the influx will place heavy demands upon public services. Coal development will add contaminants to the air. Lake and river waters will be withdrawn in multiples of acre feet. Giant electric shovels will leave a lasting imprint on the land. Some of the changes will be beneficial, others will be adverse. Presently, there are literally hundreds of research projects being conducted to determine the cost and benefit. North Dakotans have become greatly concerned with the progress that coal development may bring. Progress has an alluring yet deceiving quality about it and as a result the people of the state have begun to analyze the question of who will reap the benefits of the coal harvest.

Within the next decade, coal development will reach tremendous proportions, a size inconceivable in the minds of the first North Dakota captains of coal. The lignite industry has come a long way from the forges of the Mandan Indian Villages. The industry has made

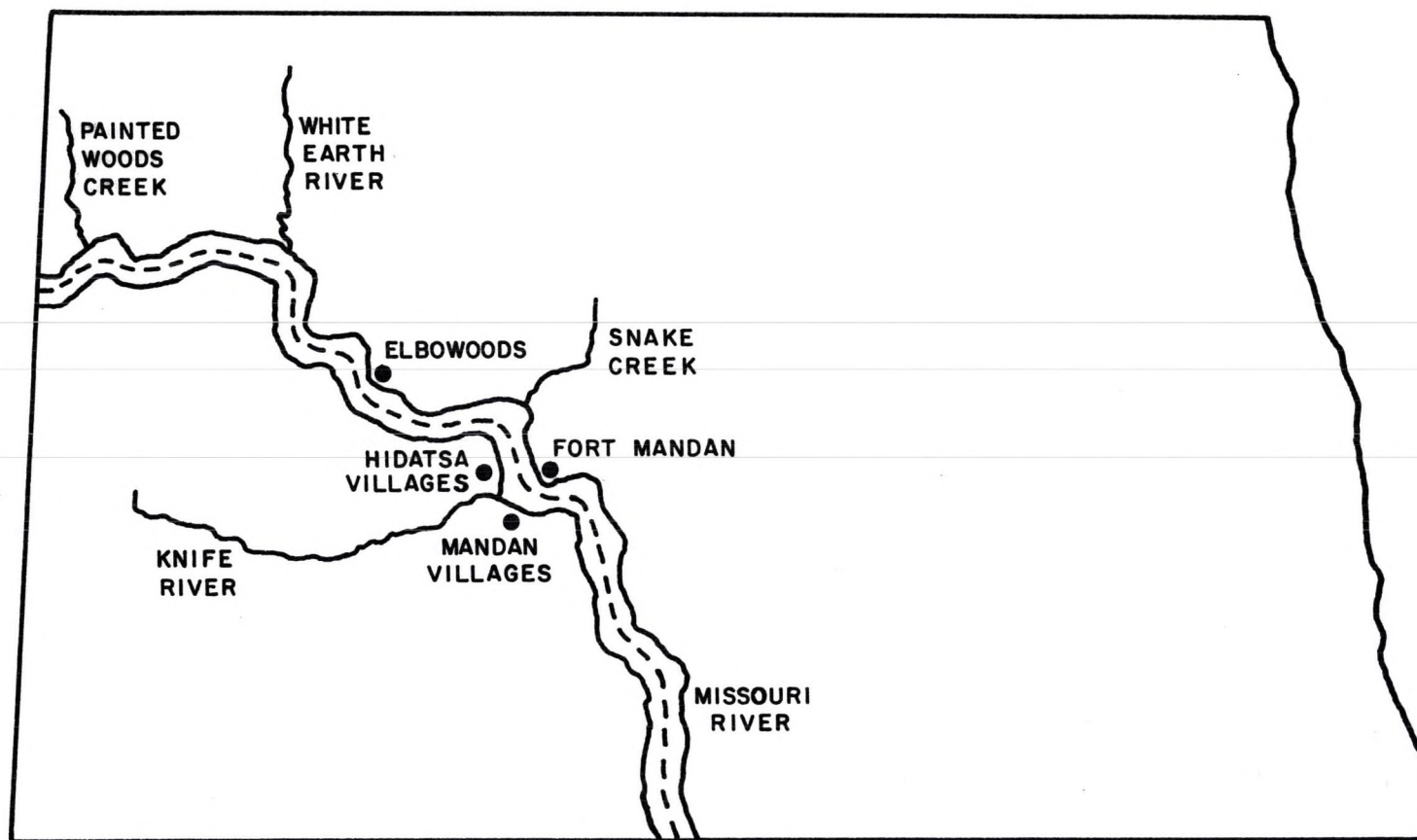
outstanding advancements from 1873 to the present, but the future ramifications of the brown coal will become a fascinating era in the history of North Dakota.

Appendix A

- Map 1. The Route of the Lewis and Clark Expedition in North Dakota.
- Map 2. Points Served by the Steamboats on the Upper Missouri River.
- Map 3. Military Posts of the Upper Missouri, 1865-1880.

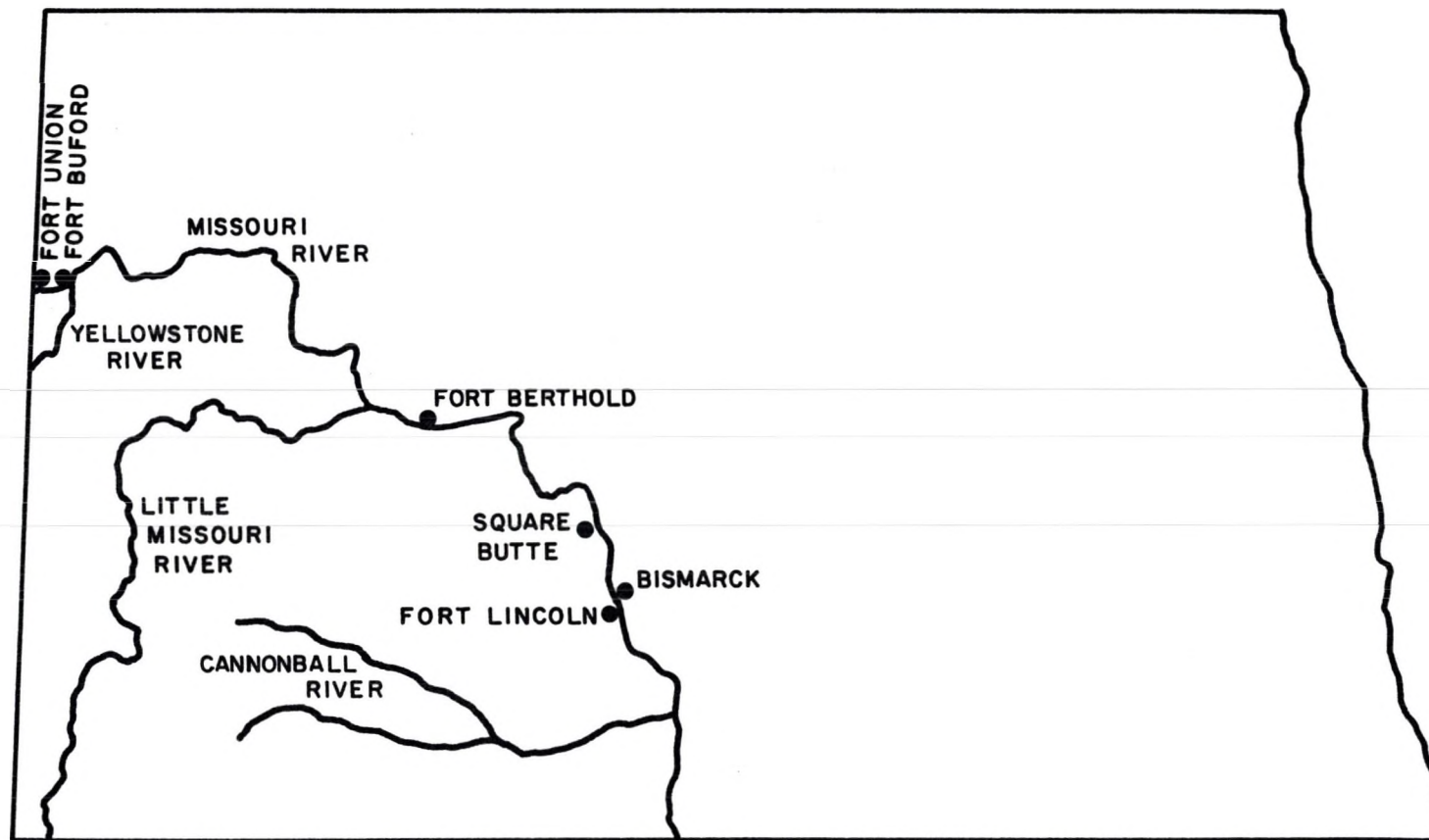


Map 1. The Route of the Lewis and Clark Expedition in North Dakota



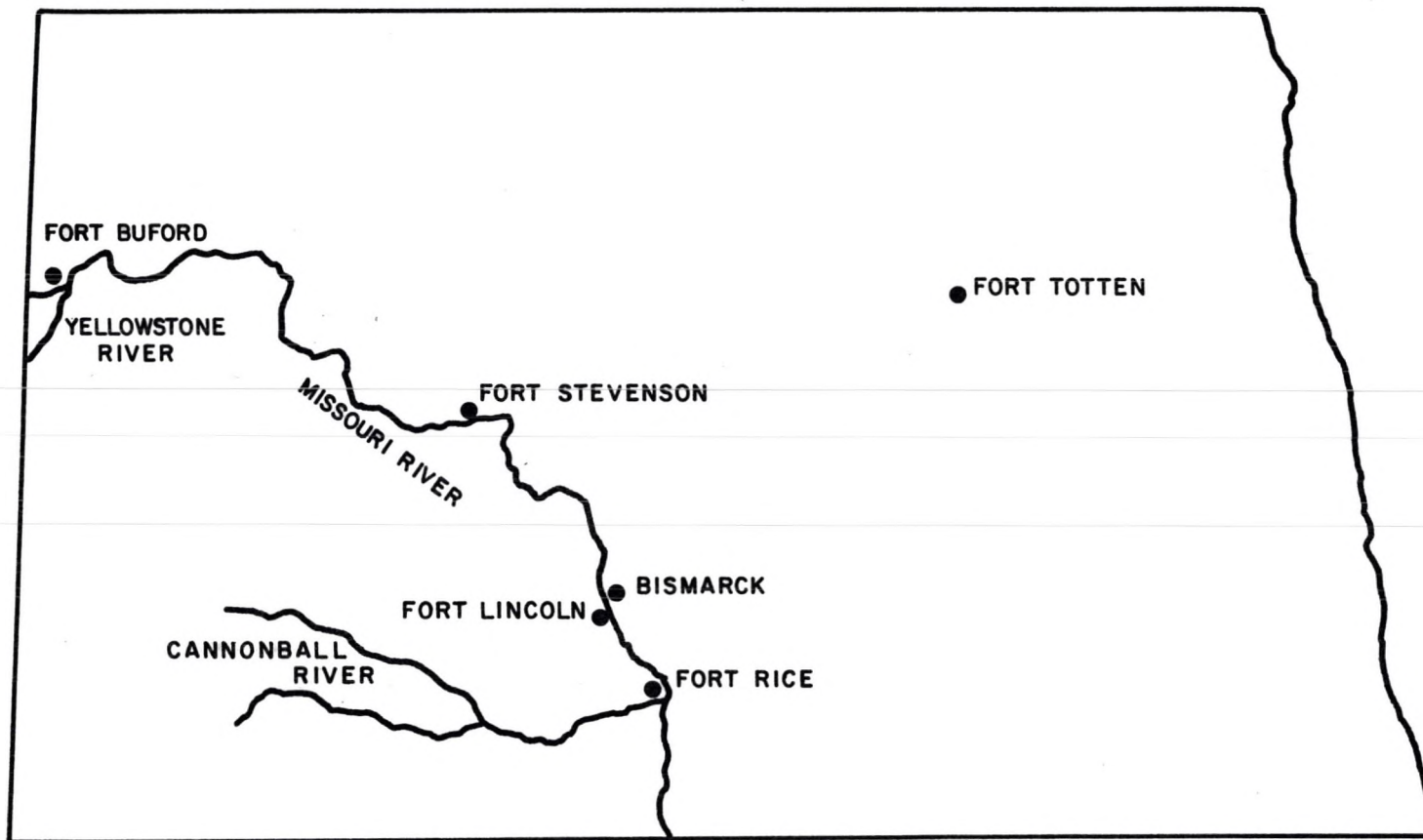
SOURCE: Russell Reid, ed., Lewis and Clark in North Dakota, (Bismarck: State Historical Society of North Dakota, 1947), pp. 123, 152.

Map 2. Points Served by the Steamboats on the Upper Missouri River.



SOURCE: Elwyn B. Robinson, History of North Dakota, (Lincoln: University of Nebraska Press, 1966), p. 89; William Lass, History of Steamboating on the Upper Missouri, (Lincoln: University of Nebraska Press, 1962), pp. 40, 114, 138.

Map 3. Military Posts of the Upper Missouri, 1865-1880.



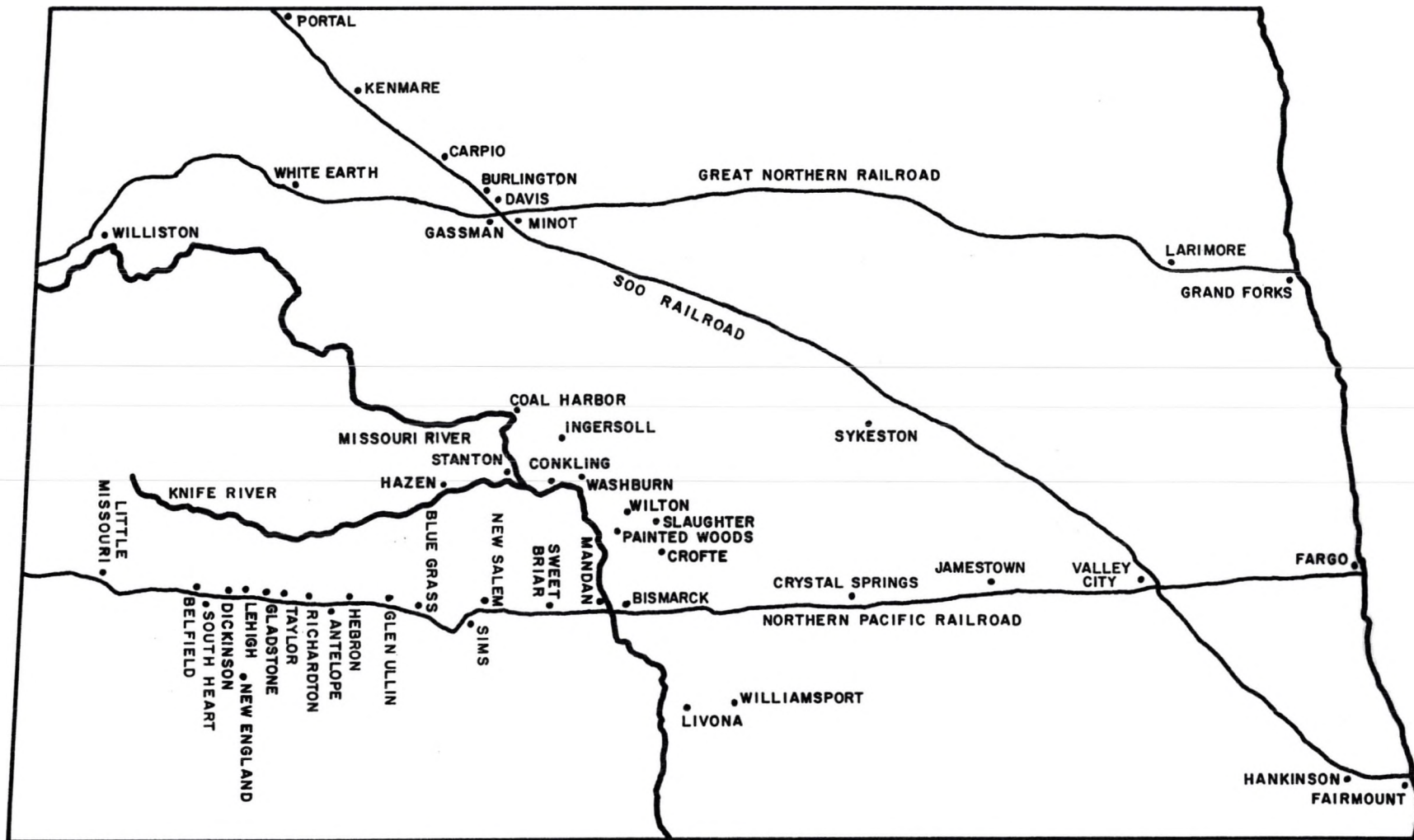
170

SOURCE: Robert G. Atheran, Forts of the Upper Missouri, (Lincoln: University of Nebraska Press, 1967), Map Insert; Elwyn B. Robinson, History of North Dakota, (Lincoln: University of Nebraska Press, 1966), p. 89.

Appendix B

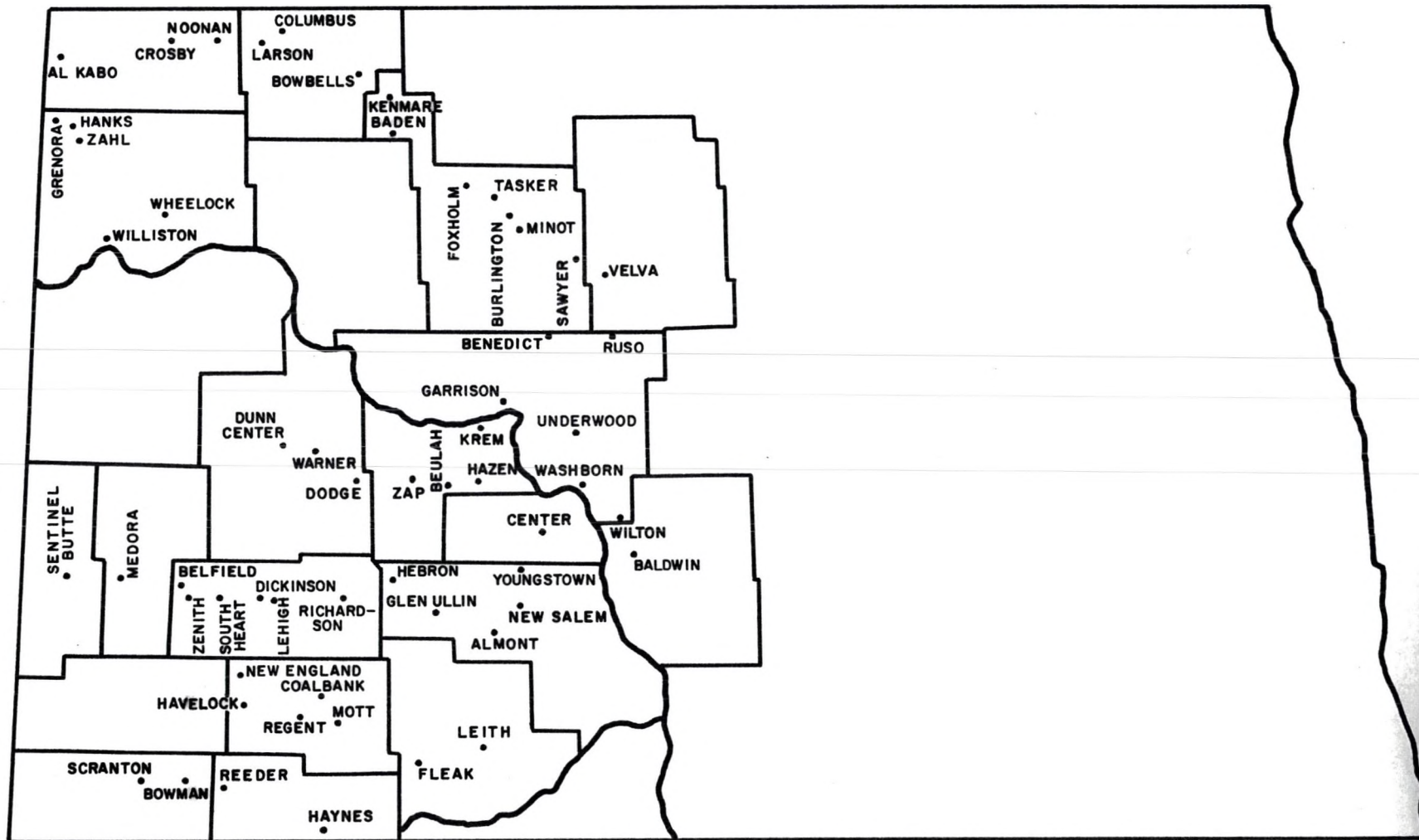
Map 4. The Cities and Towns of North Dakota Engaged in the  
Production and Consumption of Lignite Coal, 1873-1900.

Map 4. The Cities and Towns of North Dakota Engaged in the Production and Consumption of Lignite Coal, 1873-1900.



SOURCE: Clement A. Lounsberry, "Map of North Dakota--1901," *The Record* (April 1901): 36; Lewis F. Crawford, *History of North Dakota*, 3 vols., (New York: American Historical Society, Inc., 1931), vol. 1, p. 256.

Map 5. Coal Mining Towns 1920



SOURCE: Second Annual Report of the State Mine Inspector to the Governor of North Dakota for the Period Ending October 31, 1920, (Bismarck: Tribune, State Printers, 1920), pp. 7-8; Clement A. Lounsberry, "Map of North Dakota--1901," The Record (April 1901): 36.

Appendix C

Map 5. Coal Mining Towns 1920

Appendix D

Statement of Operations of Mines Under State  
Control for Period November 14th to December 5th, 1919



STATEMENT OF OPERATIONS OF MINES UNDER STATE  
CONTROL FOR PERIOD NOVEMBER 14 TO DECEMBER 5th, 1919

Name of Mines	Coal Mined (tons)
<u>Burlington District</u>	
1. Burlington City Mine	
2. Colton Mine	
3. Midway Coal Company	
4. Conan Mine	
5. Davis Mine	
6. Hunnewell Mine	
7. Lloyd Coal Mine	
8. Superior Coal Mine	
9. Wallace Mine	
10. Dakota Coal Mine	
11. Foxholm Mine	
Total Productivity Burlington District	7025
<u>Kenmare District</u>	
1. National Mine	
2. Crosby Mine	
3. Diamond Mine	
4. Farmer's Mine	
5. Mellon Mine	
6. Rich Mine	
7. Vadnais Mine	
8. Johnson Mine	
Total Productivity Kenmare District	1843
<u>Medora District</u>	
1. Red Trail Coal Company	
2. Little Missouri Coal Company	
Total Productivity Medora District	1718
<u>Noonan District</u>	
1. Tandberg Coal Company	
2. Hought Coal Company	
3. Lorbeski Coal Company	
Total Productivity Noonan District	3056

Wilton District

1. Washburn Lignite Coal Company

Total Productivity Wilton District

9348

Williston District

1. Black Diamond Coal Company
2. Star Coal Company
3. Carbon Coal Company
4. Williston Coal & Ice Company
5. Williston Coal & Ice Company #a
6. Lovejoy Mine
7. Elliothorpe East Mine
8. Bryne Mine
9. Head Coal Company

Total Productivity Williston District

4494

Grand Total

27,494

SOURCE: Lynn J. Frazier Correspondence, "Statements of Operations of Mines Under State Control for Period November 14th to December 5th, 1919, " Box 1, Folder 4, Correspondence October 1919-February 1920, Lynn J. Frazier Papers, University of North Dakota, Grand Forks, North Dakota.

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<sup>1</sup>In researching the history of lignite mining in North Dakota, the author has encountered some difficulty with the quality and the availability of research materials. Much of the basic information on lignite production came from federal and state documents, sources that were often inaccurate. Various newspapers gave more detailed information on mining companies and on those events associated with the growth of the lignite industry, but in several instances, information in one newspaper conflicted with that in another. County histories shed light on the number and nature of mines in certain areas, yet information from this source differed from the statistical records found in state documents. Aside from a few published reports, newspaper articles and one manuscript collection, there is little information available on lignite during the Great Depression. The financial records of coal mining companies, particularly those that have been in operation for a long time, have not been available. Efforts to secure these records were unsuccessful.

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