NORTH DAKOTA STATE AGENCY
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Public Document No. 26

EIGHTH BIENNIAL REPORT

of the

STATE ENGINEER

to the

Governor of North Dakota

WATER COMMISSION
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For the Biennial Period ending June 30,

1918

TRIBUNE PRINTING CO.
Bismarck, N. D.

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LETTER OF TRANSMITTAL

Bismarck, North Dakota, September 1, 1918.

HONORABLE LYNN J. FRAZIER, Governor.

Sir: In accordance with the provisions of our statutes I have the honor to transmit herewith a report of the transactions of the department of the state engineer for the biennial period, July 1, 1916, to June 30, 1918.

Respectfully submitted,
JAY W. BLISS,
State Engineer.

ROLL OF HONOR

J. W. Bliss.....State Engineer
Harris Robinson .....Assistant State Engineer
P. W. Thomas .....Assistant State Engineer
Thos. J. Lough .....Assistant Engineer
H. A. Saari .....Draftsman
V. H. Sprague .....Instrument Man
R. N. Carroll .....Instrument Man
L. B. Dale .....Instrument Man
C. L. Hoffman .....Inspector
J. H. Moore .....Field Man
Lester Monnahan .....Field Man
L. C. Hinkle .....Field Man
Frank Brasie .....Stenographer

INTRODUCTION

The state engineer's department was created by an act of the 1905 State Legislature through the passage of the Irrigation Act. For a number of years the important work of the office was confined to preliminary work and investigations of irrigable lands and studies of water supply conditions in the western part of North Dakota.

At each succeeding session of the Legislature new duties and responsibilities have been added to the department and at the present time the work for which the department was originally created has become of secondary importance.

The inspection of coal mines which is required by the department, the state engineer being made ex-officio state coal mine inspector, represents the most important duty of the department at the present time.

The state engineer in an effort to administer the affairs of his department in as efficient a manner as possible has made it a practice to cooperate, whenever practicable, with the United States Geological Survey, the State Geological Survey, the United States Office of Public Roads and Rural Engineering, the United States Reclamation Service, the United States Bureau of Mines, and the College of Mining Engineering, as well as the various county and township road officials.

The state engineer has endeavored as heretofore to make the office of special value to all the counties in their road and bridge work. The department has made every effort to promote interest in better road work and in the development of systematic methods of handling such work, as well as lending its influence to the establishing of county road systems and the coordinating of these systems between the various counties.

The creation of the state highway commission by the 1917 Legislative Assembly automatically eliminated much of the road and bridge work formerly done by the state engineer's office.

ACKNOWLEDGEMENTS

The state engineer desires to acknowledge the credit due the various county auditors and county surveyors from whom he has frequently requested and obtained much information.

Also to especially thank, in behalf of the state engineer's office, the various mine owners and operators for their prompt and courteous cooperation in the furnishing of reports concerning their mines and for consideration extended during the inspection of the mines.

Acknowledgement is also due the United States Office of Public Roads and Rural Engineering, the United States Reclamation Service, and the United States Bureau of Mines, for their valuable suggestions, aid and information.

Special credit is due Mr. E. F. Chandler, Assistant Engineer of the United States Geological Survey, who has contributed a valuable unit of this report; also to Mr. E. J. Babcock, Dean of the Engineering College, for valuable suggestions and aid in connection with mine inspection work and the testing of materials.

The state engineer again wishes to express his sincere appreciation of the services of his office and field assistants and of their loyalty and interest in the work of the office.

LIST OF EMPLOYEES OF STATE ENGINEER'S OFFICE

July 1, 1916 to June 30, 1918.

Jay W. Bliss (July 1, 1916 to June 30, 1918).....State Engineer
Harris Robinson (July 1, 1916 to March 12, 1917)...Asst. State Engineer
P. W. Thomas (Mar. 12, 1917 to Jan. 31, 1918).....Asst. State Engineer
J. M. Hansen (Feb. 1, 1918 to June 30, 1918).....Asst. State Engineer
Harris Robinson (part time).....Coal Mine Inspector
John Forister (part time) .....School Land Inspector
H. A. Saari (March 2, 1918).....Draftsman
Ruby Schumann (July 1, 1916 to Jan. 31, 1918).....Stenographer
Haldora Peterson (Feb. 1, 1918 to June 30, 1918).....Stenographer
Hazel Arnold (Aug. 21-26, 1916).....Stenographer
Frank Brasie (June 20-30, 1917).....Stenographer
J. E. Kaulfuss (June 14-30, 1917).....Assistant Engineer
E. B. Tourtellot (May 7 and 8, June 14 and 15, 1918)..Assistant Engineer
Thos. G. Lough (May 1-18, 1917).....Assistant Engineer
John C. Jansson (June 20-30, 1917).....Assistant Engineer
T. R. Atkinson (part time).....Assistant Engineer
V. H. Sprague (Feb. 5, 1917 to June 30, 1917).....Instrument Man
D. R. Williams (June 12-15, 1918).....Instrument Man
C. G. Fulknecky (Mar. 21 and 22, 1918).....Instrument Man
R. N. Carroll (Dec. 1-4, 1917).....Instrument Man
L. B. Dale (Dec. 4-7, 1917, April 10-12, 1918).....Instrument Man
Geo. F. Ludvigsen (May 14 and 16, 1918).....Instrument Man
C. L. Hoffman (July 1, 1917 to Sept. 6, 1917).....Bridge Inspector
E. McDonald (Aug. 15-19, 1916).....Field Man
J. H. Moore (July 1, 1916 to Aug. 12, 1916).....Field Man
C. L. Burton (Aug. 22-29, 1916).....Field Man
H. A. Noble (May 1-16, 1917).....Field Man
G. E. Moultrie (May 1-16, 1917).....Field Man
W. B. Holtkamp (June 11-16, 1917).....Field Man
Lester Monnahan (June 11-30, 1917).....Field Men
D. G. Printup (Nov. 23-27, 1917).....Field Man
Philip Martin (Dec. 4-11, 1917).....Field Man
Arthur Helgeson (Dec. 4-7, 1917).....Field Man
Palmer Lokke (Dec. 4-7, 1917).....Field Man
J. H. Nylen (June 13-30, 1918).....Field Man
Bernard Z. Roberts (June 12-15, 1918).....Field Man
L. C. Hinkle (June 12-15, 1918).....Field Man
Vera Bliss (Jan. 3-24, 1917).....Clerk
Mrs. Wm. Moore (Sept. 10 and 11, 1917).....Clerk
Mary Timmerman (Sept. 10 and 11, 1917).....Clerk
Mabel Parsons (Aug. 15, 1917).....Clerk

FINANCIAL STATEMENT.

July 1, 1915, to June 30, 1917.

Credit by appropriation		$16,200.00
Credit by deficit appropriation		735.00
Credit by collections July 1, 1915, to June 30, 1916		258.90
Credit by collections July 1, 1916, to June 30, 1917		134.00
Credit by work for State Auditor's office		89.33
Credit by transfer from Legislative fund		19.42
		$17,436.65
Less expenditures July 1, 1915, to June 30, 1916	$ 7,771.27	
Less expenditures July 1, 1916, to June 30, 1917	8,722.45	
Less unpaid June bills	124.55	16,618.27
Balance to General fund		$ 818.38

July 1, 1917, to June 30, 1918.

Credit by appropriation	$24,500.00
Less expenditures	9,917.76
Balance in fund June 30, 1918	$14,582.24

RECEIPTS.

July 1, 1916, to June 30, 1918.

Fees for field notes	$ 373.29
Fees for special work	1,889.91
Fees for water rights	81.00
	$ 2,344.20
Less amount credited to State Engineer's fund	$ 134.00
Credited to General fund	$ 2,210.20

FINANCIAL STATEMENT IN ACCORDANCE WITH THE SUBDIVISIONS OF THE APPROPRIATION FOR THE STATE ENGINEER'S OFFICE UNDER THE BUDGET BILL.

July 1, 1915, to June 30, 1917.

SALARY—STATE ENGINEER.

Credit by appropriation		$ 5,000.00
Less expenditures July 1, 1915, to June 30, 1916	$ 2,499.96	
Less expenditures July 1, 1916, to June 30, 1917	2,499.96	4,999.92
Balance		$ .08

CLERK HIRE.

Credit by appropriation		$ 6,600.00
Credit by deficit appropriation		435.00
Credit by fees		275.44
		$ 7,310.44
Less expenditures July 1, 1915, to July 30, 1916	$ 3,114.24	
Less expenditures July 1, 1916, to June 30, 1917	4,003.04	7,117.28
Balance		$ 193.16

POSTAGE.

Credit by appropriation		$ 175.00
Credit by deficit appropriation		50.00
		$ 225.00
Less expenditures July 1, 1915, to June 30, 1916	$ 98.18	
Less expenditures July 1, 1916, to July 30, 1917	114.49	212.67
Balance		$ 12.33

OFFICE SUPPLIES.

Credit by appropriation		$ 750.00
Credit by deficit appropriation		100.00
Credit by fees		75.68
		$ 925.68
Less expenditures July 1, 1915, to June 30, 1916	$ 467.12	
Less expenditures July 1, 1916, to June 30, 1917	409.81	876.93
Balance		$ 48.75

FURNITURE AND FIXTURES.

Credit by appropriation		$ 75.00
Credit by deficit appropriation		50.00
		$ 125.00
Less expenditures July 1, 1915, to June 30, 1916	$ 57.20	57.20
Balance		$ 67.80

TRAVELING EXPENSE.

Credit by appropriation		$ 2,100.00
Credit by transfer and fees		24.32
		$ 2,124.32
Less expenditures July 1, 1915, to June 30, 1916	$ 946.44	
Less expenditures July 1, 1916, to June 30, 1917	1,125.88	
Less transfer to printing fund	30.00	2,102.32
Balance		$ 22.00

PRINTING.

Credit by appropriation		$ 500.00
Credit by deficit appropriation		100.00
Credit by transfer from traveling expense fund		30.00
		$ 630.00
Less expenditures July 1, 1915, to June 30, 1916	$ 65.27	
Less expenditures July 1, 1916, to June 30, 1917	322.79	388.06
Balance		$ 241.94

MISCE' -ANEOUS.

Credit by appropriation		$ 200.00
Less expenditures July 1, 1915, to June 30, 1916	$ 65.87	
Less expenditures July 1, 1916, to June 30, 1917	93.95	159.82
Balance		$ 40.18

HYDROGRAPHIC WORK.

Credit by appropriation		$ 800.00
Less expenditures July 1, 1915, to June 30, 1916	$ 456.99	
Less expenditures July 1, 1916, to June 30, 1917	152.53	
Less unpaid June, 1917, bills	124.55	734.07
Balance		$ 65.93

FINANCIAL STATEMENT IN ACCORDANCE WITH THE SUBDIVISIONS OF THE APPROPRIATION FOR THE STATE ENGINEER'S OFFICE UNDER THE BUDGET BILL.

July 1, 1917, to June 30, 1918.

SALARY—STATE ENGINEER.

Credit by appropriation	$ 5,000.00
Less expenditures	2,499.96
Balance	$ 2,500.04

CLERK HIRE.

Credit by appropriation	$12,150.00
Less expenditures	4,374.45
Balance	$ 7,775.55

POSTAGE.

Credit by appropriation	$ 350.00
Less expenditures	1.00
Balance	$ 349.00

OFFICE SUPPLIES.

Credit by appropriation	$ 1,000.00
Less expenditures	370.27
Balance	$ 629.73

FURNITURE AND FIXTURES.

Credit by appropriation	$ 100.00
Less expenditures	53.40
Balance	$ 46.60

TRAVELING EXPENSE.

Credit by appropriation	$ 2,700.00
Less expenditures	1,183.57
Balance	$ 1,516.43

SCHOOL LAND EXAMINATION.

Credit by appropriation	$ 1,500.00
Less expenditures	944.27
Balance	$ 555.73

HYDROGRAPHIC WORK.

Credit by appropriation	$ 800.00
Less expenditures	405.50
Balance	$ 394.50

PRINTING.

Credit by appropriation	$ 700.00
Less expenditures	31.10
Balance	$ 668.90

MISCELLANEOUS.

Credit by appropriation	$ 200.00
Less expenditures	54.24
Balance	$ 145.76

SUMMARY OF DUTIES OF STATE ENGINEER'S DEPARTMENT AS PRESCRIBED BY LAW

Chapter 38, Compiled Laws of 1913, constitutes the irrigation law of the state and defines the duties of the state engineer in connection therewith. The state engineer has, in general, charge of irrigation within the state and of the issuing of water rights and permits, and keeps in his office complete records of all the various legal steps necessary to secure water for irrigation or other purposes.

Section 8301, Compiled Laws of 1913, requires that at the request of any board of county drain commissioners the state engineer shall furnish such engineering assistance as may be required in connection with drainage problems.

Section 2648, Compiled Laws of 1913, provides that where two-thirds of the land owners subject to assessment for the construction of drains file a protest, the state engineer shall be called upon to review assessment of benefits, the location of drain, and report on the same to the drain commissioners.

Section 8239, Compiled Laws of 1913, makes the state engineer ex-officio state coal mine inspector, and the inspection of lignite coal is made under his direction. This section also provides that at the request of the board of university and school lands the state engineer shall make examinations of the school lands to determine if such lands are coal lands within the meaning of the constitution.

Article 7, Chapter 6, Compiled Laws of 1913, makes the state engineer custodian of township plats, field notes and maps of the surveys of the public lands of the state. He is authorized to furnish copies of such records at prices determined by the governor, secretary of state, and attorney general.

Section 1990k, Compiled Laws of 1913, requires the state engineer, on request, to furnish any county superintendent of highways any information bulletins or other publicity available on road and bridge maintenance and construction. If requested to do so, the state engineer must, whenever possible, attend the meetings of the county boards of highway improvements.

Sections 602 to 607, Compiled Laws of 1913, repealed by Chapter 131, Session Laws of 1917, abolishing the advisory highway commission, annulled all duties of the state engineer in connection therewith.

Sections 1983 and 1984, Compiled Laws of 1913, require the state engineer, upon the request of county boards or township supervisors, to prepare plans and specifications for road and bridge work.

Chapter 131, Session Laws of 1917, makes the state engineer chief engineer and secretary of the state highway commission. The additional duties included under the highway commission have enormously increased the work of the department, making necessary much additional help and office room.

RECOMMENDATIONS

Examination of State Lands for Lignite Coal.

The state engineer in his Seventh Biennial Report made to the Fif-

teenth Legislative Assembly submitted recommendations relative to the disposal of surface rights only in the sale of school lands. Such recommendations were not given any consideration at that time but it is felt that the matter is of sufficient importance to warrant repetition.

The constitution prohibits the sale of any state lands bearing lignite coal. Therefore statutory provision has been made for the classification of such of the state lands as lie within the lignite coal area, or approximately the western half of the state. The state engineer is required by law to make the necessary investigations to enable him to classify these lands, those classified as "coal land" being indefinitely withheld from sale.

The western portion of the state has become well settled, with the result that there is a constantly increasing demand for state lands, and owing to the almost universal presence of lignite coal, an immense acreage much of which is excellent agricultural land, can not be sold.

The state engineer therefore recommends that the legislature give due attention to the advisability of amending the constitution giving the state the authority to dispose of the surface right only of those lands owned by it and lying within the lignite coal field. The state should of course retain title to all lignite coal, gas or oil that might be found, together with the privilege always of entrance to the land for prospecting or mining purposes. Such an arrangement would obviate the necessity of costly inspection by drilling that will in the future be found necessary in many localities, and will enable the state to comply with the increasing demand for the land. The result would be the releasing of a large acreage for farming purposes with no disadvantage to the state or purchaser.

Should the foregoing recommendation not meet with the approval of the legislature, it is suggested that an amendment be adopted defining what shall be considered coal land, that is, designating what shall be the minimum thickness of beds of coal and the maximum depth beneath the surface, in order to warrant their classification as "coal land." Under the present provisions of law, wherever coal occurs, of whatever thickness or depth underground, the land must be called coal land, whether it would ever be valuable for mining purposes or not. It is apparent, however, that such a measure will force the state at some time to engage in extensive prospecting of a costly nature, while the result would not be as satisfactory as if the state could sell the surface right only.

It takes four years or more to make an amendment to the constitution operative and for the reason that during this time it may become necessary to hold sales of school lands in counties where no examinations have been made, it is recommended that an appropriation of $2,000 be made to enable the state engineer to conduct such further investigations as the Board of University and School Lands may find essential. Examinations have not been made in Adams, Billings, Bowman, a small part of Burleigh, a small part of Dunn, Hettinger, McKenzie, Slope and Sioux Counties, all of which lie within the limits of the lignite coal area.

Drainage

Under the head of drainage the state engineer presents a copy of a proposed amendment which is intended to facilitate drainage work within the state. The importance of this matter was submitted to the Fifteenth Legislative Assembly, but no relief was secured. It is respectfully suggested that the Sixteenth Legislative Assembly give this subject careful consideration. The drainage of lands within the state becomes each year a matter of more importance and any legislation affecting drainage should receive close attention. It is to be remembered that our drainage laws have become well established through numerous actions brought before the supreme court, and any new legislation is almost certain to inject an element of uncertainty that may retard rather than expedite drainage work. The amendment as proposed by the state engineer will make it easier to dispose of drainage bonds.

Flood Control.

Inasmuch as flood control is closely related to the subject of drainage and is a matter in which the state engineer's office may properly be interested, the following will not be out of place. A special commission having been appointed to investigate the matter of flood control, with particular reference to the Red River Valley, no recommendations will be made. Press reports indicate that in the popular mind a belief has been created that flood control may be secured through power development. Attention is called to the fact that the requirements of flood control and flood prevention are diametrically opposed, except under unusual conditions. None of the streams within the state which are tributary to the Red River present opportunities for the development of sufficient power to warrant consideration as a means of reducing the cost of flood control projects, or even of justifying the added expense that would be necessary to secure power projects. The state engineer's department is vitally interested in any feasible power projects within the state but is of the opinion that so far as this state is concerned flood prevention and power development cannot be combined to any considerable extent. Power development requires a stable source of water supply which means carrying full reservoirs of water at all times, while dams or reservoirs created for the retention of flood waters and the consequent regulation of their discharge requires that reservoirs be emptied as rapidly as possible and kept emptied if they are to perform their functions. It is believed that flood conditions in the Red River Valley may be controlled to a considerable extent through the construction of retention reservoirs, some channel changes, and in rare instances, possibly through the construction of levees.

Coal Mining.

The state engineer, as ex-officio state coal mine inspector, recommends that suitable legislation be adopted in regard to the ventilation and timbering of coal mines, and delegating to the state coal mine inspector authority to enforce such laws when the health and safety of the employees may require it. It is recommended that the committee on mines and minerals call into conference the operators of the leading mines with-

in the state for the purpose of framing laws suitable for conditions in North Dakota. The conditions in this state are such that the mining laws of other states cannot be adapted to our requirements. The state engineer's office will be pleased to render every assistance possible in this matter.

Hydrography

The United State Geological Survey, under the efficient direction of Mr. E. F. Chandler, Assistant Engineer U. S. G. S., has been carrying on within the state a fairly complete hydrographic survey and has established stream gaging stations on representative creeks and rivers. As is customary in many other states, the state engineer's office has been cooperating with the United States Geological Survey to the extent of paying the salaries of the stream gagers, which are between five and eight dollars per month. Eight hundred dollars have been appropriated for this work during the past biennial period and it is earnestly recommended that a similar amount be appropriated to carry on the work during the ensuing biennial period. The records obtained from the work of the United States Geological Survey are of great importance to the state.

Salaries

The conditions which have prevailed for the past two years have made it extremely difficult to secure the services of competent engineers, and the state engineer recommends that the salary of the assistant state engineer be increased from one hundred fifty to two hundreds dollars per month. During the past biennial period there has been difficulty in retaining an assistant state engineer owing to the fact that the salary available is less than that received by engineers in private work.

Military Information Map

The United States War Department Division of Military Information has requested, through Governor Lynn J. Frazier, the cooperation of the state engineer's office in preparing maps of North Dakota giving certain information particularly desired in the compilation of what is termed a Progressive Military Map of the United States. The state engineer's office has consented to cooperate to the extent of its ability, and Mr. J. M. Hansen has been put in charge of the work. It is urgently recommended by the state engineer that the item in the Budget, asking for a special appropriation to cover expenses for Mr. Hansen and his assistants, be allowed, as shown in the request made to the State Budget Board.

IRRIGATION

EXPLANATION OF THE IRRIGATION DISTRICT LAW

By Willis J. Eggleston, District Council, United State Reclamation Service.

In previous reports references have been made to the practice of irrigation in the western part of the State and the increase in irrigated acreage has been negligible as evidenced by applications for permits to appropriate water. The two large enterprises of the United States in Williams and McKenzie Counties have been more or less inactive due to various circumstances and conditons.

The Williston Project of the United States takes its water supply by pumping from the Missouri River, the power to actuate pumps being supplied at a coal mine some three miles from the river bank. Owing to the high operating cost and the inability of the local organization to secure a sufficient number of paying water users for any single irrigation season, the United States has considered it not feasible to operate the works and closed them down three years ago to remain closed until a sufficient acreage could be pledged to take water from the irrigation works and make the stated payments so that the land could be irrigated and the plant operated without loss and without an exorbitant charge upon the lands. Three successive crop failures in the vicinity of the irrigation project have stimulated interest to such an extent that strong efforts have been made by the local people to secure irrigation water for their lands.

The solution seems to have been found in the irrigation district, which is a public corporation having a taxing power and local self government, in these particulars being similar to the school district. The Government irrigation projects in the arid States are gradually being completed and passing from an experimental stage to one of regular and increasingly profitable operation and consequent production of crops.

In order that the irrigation district plan might be availed of upon the Government projects in this State, a bill was prepared for the approval of the last legislature providing for the organization of irrigation districts and including what were thought to be the best and most adaptable features of the irrigation district laws of several western States. This bill was thoroughly considered and was approved by the legislature and signed by the Governor on March 8, 1917. This act is entitled "An Act to provide for the Creation, Organization, Government and Extension of Irrigation Districts," and briefly its provisions are as follows:

"Whenever a majority of the electors owning lands or holding leasehold estates in the manner and to the extent hereinafter provided in any district susceptible of one mode of irrigation from a common source and by the same system of works, desire to provide for the irrigation of the same they may propose the organization of an irrigation district under the provisions of this act and when so organized each district shall have the powers conferred or that may hereafter be conferred by law upon such irrigation district, provided that where ditches or canals have been constructed before the passage of this act of sufficient capacity to water the lands thereunder for which the water taken in such ditches is appropriated, such ditches and franchises and the land subject to be watered thereby, shall be exempt from operation of this law, except such district

shall be formed to make purchase of such ditches, canals and franchises. Provided, that this law shall not be construed to in any way affect the rights of ditches already constructed. Provided, further, that the term elector, as used in this chapter shall include any resident of the State of North Dakota, owning not less than ten acres of land within any district or proposed district, or entryman upon public lands therein, or any resident of the State of North Dakota holding a leasehold estate in not less than forty acres of State land within said district for a period of not less than five years from the date at which said elector seeks to exercise the elective franchise. Provided, however, when the elector is the owner or entryman of land in more than one division of the irrigation district and reside without the district he shall be considered an elector in that divison of the district in which the major portion of his land is situated."

The formation of a district requires first the filing of a petition with the Board of County Commissioners signed by a majority of the electors of the proposed district who shall be entrymen upon or shall own or hold leasehold estates in a majority of the whole number of acres owned or held by the electors of the proposed district, the petition to be supported by a bond in double the amount of the probable cost of organizing the district. A copy of the petition must be filed in the office of the State Engineer and the petition will be published and a hearing thereafter had. The board will give notice of an election to be held in the proposed district to determine whether or not a district shall be organized and have the election of officers. The manner of holding subsequent elections is fully set out in the bill.

It is provided: "All water rights shall be appurtenant to the land. If any tract of land, or any part thereof, to which a water right has attached shall at any time become sub-irrigated, to the extent that water is no longer of any benefit thereon for irrigation purposes, the owner or entryman thereof may make application to the irrigation district board to relieve such lands so sub-irrigated from the district assessment as provided herein, releasing in such application all claim to such water right as may belong to, or that has been applied to or upon said lands until such time as the said lands may be drained and water may again be applied to beneficial use. Provided, that such land owner or entryman may apply for a permit to transfer such water right to any other lands to which the same may be beneficially applied, and apply to have such new or additional tract included within the boundaries of such district as provided by law and the exclusion of such lands, and the inclusion of the new tract as herein contemplated. The Board shall thereupon make the appropriatiate order of suspension of assessment, or of the exclusion and inclusion of the lands, and the transfer of the water right. A certified copy of such order shall be filed for record and recorded in the office of the register of deeds in the county in which such land is situated, and thereafter all the obligations against such lands from which such water right has been taken, arising by reason of such water right, shall thereupon be cancelled and such obligation shall follow and attach with such water right to the land so included, if any: Provided, nothing herein contained shall authorize or empower the Board of Directors to include any land within its district unless the owner or lessee thereof shall pay or obligate such land to pay the same rate per acre for such water as all other lands have orginally paid or shall have been obligated for, to cover costs of construction. It shall be the duty of the directors to make all necessary arrangements for right of way for laterals from the main canal to each tract of land subject to assessment, and when necessary the Board shall exercise its right of eminent domain to procure

right of way for laterals and shall make such rules in regard to the payment for such right of way as may be just and equitable: Provided, this section shall not be construed to deprive any person, persons, company or corporation now entitled thereto, to exercise the right of eminent domain."

"The Board, its agents and employees shall have the right to enter upon any land within the district, to make surveys, and may locate the line of any canal, or canals, and the necessary branches for such location. The Board shall also have the right to acquire either by purchase or condemnation, all lands and waters and other property necessary for the construction, use, maintenance and repair and improvement of any canals, power plants of any kind or nature, and lands for reservoirs for storage of water and all necessary appurtenances. The Board shall also have the right to acquire by purchase or condemnation any irrigation works, power plant, ditches, canals or reservoirs already constructed, for the use of said district. In case of purchase, the bonds of the district hereinafter provided for may be used at their par value in payment. The Board may also construct the necessary dams, reservoirs and works for the collection of water for the district and do any and every lawful act necessary to be done that sufficient water may be furnished to each tract of land in the district for irrigation purposes, and may enter into any obligation or contract with the United States for the construction, operation and maintenance of the necessary work for the delivery and distribution of water therefrom under the provision of the Federal Reclamation Act and all acts amendatory thereof, or supplementary thereto, and the rules and regulations established thereunder; or the Board may contract with the United States for a water supply under any act of congress providing for or permitting such contract, and in case contract has been, or may be hereafter made with the United States as herein provided, bonds of the district may be deposited with the United States at ninety per cent of their par value, to the amount to be paid by the district to the United States under any such contract, the interest on such bonds to be provided for by assessment and levy as in the case of other bonds of the district and regularly paid to the United States to be applied as provided in such contract."

The legal title to all property acquired vests in the district and the board is given authority to hold and acquire property and to sue or be sued in the name of the irrigation district.

In case funds are required for the purchase of property or for construction work and a bond issued as contemplated for such purpose a special election may be called and if a favorable vote results bonds may be issued in the manner prescribed by the statute—the bonds and interest thereon to be paid by revenue derived from annual assessments upon the real property of the district—assessments to be spread upon the lands in the proportion of the benefits received. All changes in valuations and assessments of property to be adjusted by the Board of Directors, constituted a board of equalization for that purpose.

"In case of the neglect or refusal of a Board of Directors of any irrigation district to cause an assessment and levy to be made for the payment of principal and interest of outstanding bonds, and for all payments due or to become due the ensuing year to the United States, under any contract between the district and the United States and for expenses incurred in organizing said district, as in this act provided, then the assessment of property made for the preceding year together with any sums due to the United States in accordance with the terms of existing contract shall be adopted and shall be the basis and assessment for the district and the county board of the county in which the district was originally organized shall cause an assessment roll of said district to be

prepared, and shall make the levy for the payment of the principal and interest on bonds and to meet all payments due or to become due, the ensuing year to the United States under any contract between the district and the United States, and to meet the expenses for organizing said districts in the same manner and with like effect as if the same has been made by said Board of Directors; and the expense incident thereto shall be borne by such district."

Contracts for construction work and materials will be awarded after the advertisement for competitive proposals to the lowest responsible bidders.

"The cost and expense of purchasing and acquiring property and constructing the works and improvements shall be wholly paid out of the construction fund, or in the bonds of said district at their par value, after having first been advertised for sale and having received no bids therefore at ninety-five per cent or upwards of their face value; provided, in case the said bonds, or the money raised by the sale is insufficient for the purposes for which said bonds were issued, additional bonds may be issued, after submission of the question at a general or special election to the qualified voters of said district; and in case of the issuance of additional bonds, the lien for taxes for the payment of the interest and principal of said issue shall be a subsequent lien to any prior bond issue. Provided, bonds need not be issued where the cost and expenses of purchasing and acquiring property and constructing the works and improvements herein provided for are covered by a contract between the district and the United States. In lieu of the issuance of additional bonds the Board of Directors may provide for the completion of the irrigation system of the district by the levy of an assessment for the other purposes provided in this article. For the purpose of defraying the expenses of the organization of the district, and the care, operation, management, repair and improvement of such portions of such canal and works as are completed and in use, including salaries of officers and employees, the Board may either fix rates of tolls and charges, and collect the same from all persons using said works for irrigation or other purposes, or may provide for the payment of said expenditures by a levy of assessments therefore, or by both said tolls and assessements, if by assessment, such levy shall be made upon the completion and equalization of the assessment roll."

"Provided, further, if after the annual assessment for the current year, the funds provided are for some unusual or unforseen cause insufficient for the proper maintenance and operation of said district, the Board of Directors shall have the power to borrow additional funds needed, to an amount not to exceed fifty cents per acre for the land embraced in said district, pledging the credit of the district for payment of the same, and shall include in the estimate for the levy for the ensuing year for the general fund the amount so borrowed, and provide for the payment of the same."

"The right-of-way is hereby given, dedicated and set apart, to locate, construct and maintain works over and through any of the lands which are now, or may be the property of the State; and also there is given dedicated and set apart, for the use and purposes aforesaid, all water and water-rights owned by this State within the district."

"The Board of Directors, or other officers of the district, shall have no power to incur any debt, or liability whatever, either by issuing bonds or otherwise in excess, of the express provisions of this Act, and any debt or liability incurred in excess of such express provisions shall be and remain absolutely void, provided, any irrigation district organized under the provisions of this article shall have the power to and it shall be its duty to provide for the proper drainage of any and all lands embraced within its limits which are, or have been sub-irrigated by reason of the

lawful use of water from its canal by the owner or lessee of the lands subirrigated or from any cause not the fault, or by the consent of such owner or lessee, and for such purpose such district shall have all the authority herein granted for levying special assessments or otherwise providing funds necessary to properly drain such lands; entering upon lands for the purpose of making surveys; exercising the right of eminent domain; contract for the construction of necessary ditches; and further shall have the right to extend such drainage ditches outside of the limits of such districts for the purpose of conducting the drainage water to other lands upon which the same may be lawfully used or to return the same to some natural water course. The powers herein granted shall include the power to enter into a contract with the United States to carry out and effectuate all proper drainage of the district, or any part thereof."

"In case the water supply shall not be sufficient to supply continuously the lands susceptible of irrigation therefrom, then it shall be the duty of the Board of Directors to apportion said water."

Provision is also made for the installation of automatic measuring devices in the headgates of the main canals and distributing laterals.

Additional lands may be included within a district upon petition and acceptance thereof by the Board of Directors. In case of objection by any interested person an election will be duly called and held to determine the question of admitting or rejecting the additional lands. Petitions for exclusion of certain lands may also be handled in a similar manner.

"The Board of Directors of any irrigation district organized under the provisions of this act, shall, before issuing and before selling any bonds of such irrigation district, and in their discretion before making any contract or levying any assessment or taking any special action, commence a special proceeding, in and by which the proceedings of such Board and of said district, providing for and authorizing the issue and sale of the bonds of said district, the making of any contracts or levying any assessment or taking any special action shall be judicially examined, approved and confirmed or disapproved and disaffirmed."

The Board of Directors of any irrigation district organized under the laws of this state may enter into contracts for a supply of water for the irrigation of the lands within said irrigation districts with any person, firm, association, corporation or the United States of America; the source of supply of said water may be either within or without the boundaries of the State of North Dakota, and said water supply may be either the entire supply for said district or to supplement an appropriation already made by the said district."

"If said contract provides for payment to be made extending for a period of more than one year from the date of making said contract the Board of Directors of said irrigation district shall submit said contract to the legal voters of said district."

"If a majority of the voters that vote on said proposition vote for approval of said contract the Board of Directors shall enter into said contract and shall thereafter at the time the other taxes of the district are levied, levy a tax on the taxable property of the district sufficient to pay the amount due on said contract and to become due on said contract before the next annual levy in said district."

"Any irrigation district, heretofore or hereafter, organized under the laws of the State of North Dakota, for irrigation or drainage purposes is hereby authorized and empowered to enter into contract with the United States of America whereby the bonds of the district are guaranteed by the United States or financial credit is extended by the United States, to the district and for the sale, purchase or use of any canal, ditch,

reservoir, right-of-way, irrigation or drainage system or other property owned or to be acquired for the use of such district."

"Any irrigation district organized under the laws of North Dakota is hereby authorized to accept of the provisions of any act of congress of the United States applicable to such district and to obligate itself to comply with such laws, rules and regulations as may be promulgated by any department of the United State in pursuance of such Acts, and irrigation districts contracting with the United States under the provisions of this act shall be governed in all matters by the laws of the state relating to irrigation or drainage districts as the case may be except in such things as may be otherwise provided for such district. This section shall not limit the rights which any irrigation district has under existing laws to purchase a water supply or otherwise contract and shall be cumulative thereto."

Irrigation districts may be dissolved by a majority voting at a special election called for that purpose and its property thereafter sold for payment of indebtedness in the manner prescribed by the statute.

"Board of Directors of any irrigation district in the State of North Dakota which has issued valid interest bearing bonds that are now outstanding and unpaid, may take up and pay off any such bonds whenever legally possible, by the issue and sale or the issue and exchange therefor of the bonds of such irrigation district; but bonds so to be issued shall not exceed the amount lawfully owing and unpaid upon the bond or bonds so sought to be taken up and paid. Bonds so issued shall not bear interest greater in rate or amount per annum than the bonds so sought to be taken up and paid."

"Every irrigation district within the State of North Dakota shall be liable in damages for negligence in delivering or failure to deliver water to the users from its canal to the same extent as private persons and corporations; provided, however, such districts shall not be liable as herein provided, unless the party suffering such damage by reason of such negligence or failure shall, within thirty days after such districts shall fail to deliver water, serve a notice in writing on the chairman of the Board of Directors of such district, setting fourth particularly the acts committed or the commissions of the duties to be performed on the part of the district, which it is claimed constitute such negligence or omission, and that he expects to hold such district liable for whatever damages may result; provided, further, such action shall be brought within one year from the time the cause has accrued."

The Lower Yellowstone Irrigation Project taking from the Yellowstone River in eastern Montana covers about 20,000 acres of excellent land in North Dakota and steps are being taken to form an irrigation district under the law above mentioned as soon as favorable terms of contract can be agreed upon. It is possible that the development of irrigation through irrigation districts on a large scale may make for extentive irrigation development in western North Dakota for the reason that it is well known that there are numerous streams from which water can be diverted but which were thought at the time of their investigation by the Government a few years ago to be rather too expensive for immediate development. The increase in price of lands and the influx of immigration and particularly the success of irrigation enterprises in the arid States will undoubtedly turn attention again to these possibilities.

The advantages of irrigation even in the semi-arid regions must be obvious to any thinking person in the present day and the peculiar advantages of the irrigation district form of handling such enterprises

is becoming more and more evident. Among these advantages are the following:

"1. The irrigation district brings into the project all of the lands in a solid body, and so helps to keep down to a minimum the cost per acre for building and operating the project.

"2 The irrigation district laws provide for confirmation by the courts of the legality and validity of the proposed contract or bond issue and determination of the legal questions involved in advance of the expenditure of any money. This gives greater security in proceeding with the work and disposes of a lot of legal objections which might otherwise be raised after the money has been invested.

"3. The irrigation district has greater efficiency in the collection of charges on account of the taxing power, and through the taxing power can collect from the uncultivated speculative holdings as well as from those who apply for water.

"4. Through long practice the people have became accustomed to regard taxes as a kind of obligation which must be met promptly when due, and by making use of the irrigation district the return of the money invested is secured with less delay, difficulty, and expense in collection and much less bad feeling on the part of those making the payments than would be the case if it is attempted to collect by a system of individual nagging or individual suits.

"5. If the charges are secured by means of a contract between the Government and the irrigation district and collected as a tax, the obligation is in the nature of a municipal bond issue, and the title of the individual landowner remains clear, so that he can secure credit and borrow money more readily and at better rates than he can where a stock subscription contract, which is regarded as a first mortgage, appears on his abstract of title."

IRRIGATION

July 1, 1916 to June 30, 1918

The state engineer's office received but six applications for permits to appropriate water during the biennial period ending June 30, 1918. The number of applications received vary directly in proportion to the amount of rainfall, and during seasons when there is approximately a sufficient amount of rainfall the department receives very few, if any, new applications for water rights. Individuals who have filed water rights during years when railfall is insufficient frequently let them lapse during subsequent years when more normal conditions prevail. The state engineer has repeatedly called attention to the fact that the only way in which irrigation can be made to pay, even for the individual or one man projects, is by keeping the necessary irrigation works in working order at all periods of the year when it may become necessary to supply water to the land. An irrigation project started after dry weather has set in will not save crops, and even though there are occasional years when the need for an artificial supply of water is not necessary, in most years in the western part of North Dakota water can be added to land with beneficial results.

It is not anticipated that irrigation in North Dakota will in the near future be attempted on any extensive scale, but it is believed that where irrigation can be practiced even on a small scale, by individual owners it becomes an improvement of the greatest value. The state engineer

does not believe that generally the conditions in North Dakota are such as to warrant an attempt to irrigate small grains; at least unusually favorable conditions must exist to make this feasible. The chief value of irrigation will be to increase the yield of forage and feed crops and to make certain a sufficiency of feed for stock. The tendency toward diversified farming and the resulting increase in stock makes it particularly essential that winter feed shall be available.

It has been shown in previous reports that throughout the western part of North Dakota there are a large number of locations where irrigation can be practiced in a small way by individual owners, and most of our numerous creeks afford bottom lands ideally situated for the artificial addition of water.

The state engineer's office is at all times anxious to perform every service that can legally be performed in connection with aiding in irrigation work. The department has issued permits to appropriate water totaling 274.28 cubic feet per second for use on 21,352.6 acres of land. The United States Reclamation Service projects total approximately 47,500 acres of land, all under the Williston Project, the Beauford-Trenton Project, and the Lower Yellowstone Project.

INDIVIDUAL IRRIGATION PROJECTS.

July 1, 1916 to June 30, 1918

98. Dochterman's Irrigation Project.

Mr. L. B. Dochterman of Williston filed an application for a permit to appropriate water for the irrigtion of 40 acres of land in Section 22, Township 154, Range 101. The water is to be taken from Sand Creek at a point where it widens into a slough with an average depth of two and one-half feet. It is estimated that the necessary construction work will cost $1,000. Water is to be delivered to the ditch by a centrifugal pump driven by a 10 H. P. electric motor. A power transmission line runs within a mile of the point of diversion of the water supply.

99 Bacon's Irrigation Project.

Mr. Granville D. Bacon of Elks Landing, McKenzie County, filed an application for a permit to appropriate 3.88 second feet of water for the irrigation of 310 acres of land in Sections 34 and 35, Township 154, Range 95. Water will be taken from a coulee which has a considerable discharge during the spring run-off. The original plans called for a storage dam but this has been changed and a system of ditches only will be constructed.

100. Heltzel's Irrigation Project.

Mr. J. W. Heltzel of Lemmon, S. D., has filed an application for a permit to irrigate twelve acres of land from a storage reservoir. Water will be secured from coulees during the spring run-off. The land to be irrigated is in Section 35, Township 129, Range 92, in Adams County. The total cost of this irrigation work is estimated at $850.

101. Northern Pacific Railway Company's Reservoir.

The Northern Pacific Railway Company filed an application for a

permit to appropriate two second feet of water for railroad uses at Hebron, N. D. A large storage reservoir has been constructed by excavating the bed of a creek. The total cost of the project is estimated at $24,000.

102. Northern Pacific Railway Company's Reservoir.

The Northern Pacific Railway Company filed an application for a permit to appropriate water for railroad uses at Glen Ullen, N. D. Two second feet of water is applied for and a large storage reservoir has been constructed by excavating the bed of Curlew Creek. The total cost of the project has been estimated at $29,700.

103. Painted Woods Irrigation Project.

On August 30, 1917 an application for a permit to appropriate water for irrigation was filed by Henry A. Martin, Fred J. Willinson, and Wayne S. Martin, all of Trenton, Williams County, North Dakota. The application calls for 3.44 second feet of water, the 275.5 acres to be irrigated being in Sections 14 and 15, Township 153, Range 102. The cost of the ditches and necessary dam is estimated at $450.

104. Tollefson's Irrigation Project.

Mr. Arne Tollefson of Banks, McKenzie County, has filed an application for a permit to use 1.58 second feet of water for the irrigation of 126.1 acres of land in Section 23, Township 153, Range 97. The water is to be taken from Tobacco Garden Creek by means of a movable pump outfit. It is estimated that the project can be put in working condition for $840.

FILINGS MADE IN ACCORDANCE WITH THE IRRIGATION CODE FROM JULY 1, 1917, TO JUNE 30, 1918.

No.	Name of Applicant	Lands to be Irrigated.	Source of Supply	Amount of water Cailmed	Acres	Date of Claim
				Second Feet		
98	L. B. Dochterman	SW¼ SE¼ Sec. 22, T. 154 N., R. 101 W.	Sand Creek and slough...	.5	40	4-25-16
99	Granville B. Bacon.....	NE¼ Sec. 34, N½ of NW¼ & W½ of NE¼ Sec. 35, T. 154, R. 95 W.	Flood waters of draws and coulees	3.88	310	12-4-16
100	J. W. Heltzel	SW¼ of SW¼ Sec. 35, T. 129, R. 92	Melting snow and rainfall	0.15	12	5-4-17
101	Northern Pacific Ry. Co.....	Railroad purposes	Knife River	2		7-2-17
102	Northern Pacific Ry. Co.....	Railroad purposes	Curlew Creek	2		7-2-17
103	Henry A. Martin, Fred J. Wilkinson and Wayne S. Martin	NW¼ SW¼ Sec. 14, NW¼ Sec. 15, T. 153, R. 102	Painted Woods Creek....	3.44	275.5	8-30-17
104	Arne Tollefson	NW¼ SW¼ Sec. 16, SW¼ Sec. 23, T. 153, R. 97	Tobacco Garden Creek....	1.58	126.1	1-5-18

Total acreage, 763.6. Total amount of water claimed, 13.55 second feet.

WATER LICENSES ISSUED TO JUNE 30, 1918.

Number of Permit	No. of Water License	To Whom Issued	Date
47	2	Western Dakota Railway Co.	March 25, 1911
48	3	Western Dakota Railway Co.	March 25, 1911
49	4	Western Dakota Railway Co.	March 25, 1911
50	5	Western Dakota Railway Co.	March 30, 1911
85	6	Northern Pacific Railway Co.	Sept. 2, 1914
93	7	Northern Pacific Railway Co.	April 3, 1916
97	8	Northern Pacific Railway Co.	Sept. 20, 1916
92	9	Northern Pacific Railway Co.	Oct. 2, 1916
101	10	Northern Pacific Railway Co.	Dec. 1, 1917
102	11	Northern Pacific Railway Co.	Dec. 1, 1917
68	12	J. R. Burns	Jan. 30, 1918

ROAD AND BRIDGE WORK

July 1, 1916 to June 30, 1918.

The state engineer's office has had charge of a considerable amount of road and bridge work during the biennial period just closed, in addition to the work done by the state Highway commission. The state engineer's office and the state highway commission have agreed that roads which have been designated as state roads and on which the county may desire to make improvements, where it is impossible to make such improvements as either state aid or federal aid projects engineering services will be furnished the county gratis. Work which may be requested on roads which are not a part of the state system will be performed by the state engineer's office as heretofore.

ROAD WORK.

Burleigh County—Wild Rose Township

In the spring of 1917 Wild Rose Township in T. 137, R. 75, requested the state engineer's office to survey and prepare plans and specifications for six miles of road work extending east and west across the township one mile north of the township line. These plans and specifications were prepared and the township has been improving this road in sections as rapidly as the funds available will permit. The township has accomplished some first-rate work, particularly in connection with a number of heavy grades.

Hettinger County

During the summer of 1918 plans and specifications were prepared for road work in Hettinger County and several right of way surveys were also made.

Logan County—Red Lake Township

During the summers of 1917 and 1918 the state engineer's office made a number of road surveys for Red Lake Township and prepared plans and specifications for the road work. Numerous right of way surveys were also made for roads not on section lines.

Nelson County—Lakota Township

The state engineer's office in the spring of 1917 prepared plans and specifications for road work in Lakota Township totaling seven and one-half miles. The work consisted of 6,200 cubic yards of cut and fill work and 1,515 cubic yards of turnpiking, together with 373 lineal feet of culverts.

Steele County

During the spring of 1917 the state engineer's office made surveys and prepared plans and specifications for eleven miles of road work in Steele County. Division No. 1, consisting of eight miles in Newburgh and Beaver Creek Townships, called for 16,130 cubic yards of turnpiking and 3,959 cubic yards of cut and fill work, six lineal feet of 8-inch culvert, 130

lineal feet of 12-inch culvert, 30 lineal feet of 18-inch culvert, and eight lineal feet of 24-inch culvert. Division No. 2 in Sharon Township consisted of 3,490 cubic yards of turnpiking and 3,603 cubic yards of cut and fill work, together with 262 lineal feet of 15-inch culverts. Division No. 3 in Green View Township consisted of 1,325 cubic yards of cut and fill work.

Wells County

During the summers of 1917 and 1918 the state engineer's office prepared plans and specifications for several small road jobs in Wells County, in addition to which a number of right of way surveys were made.

BRIDGE WORK.

Griggs County

During the summer of 1917 the state engineer's office furnished plans and specifications for culverts and bridges constructed in Griggs County. Plans were also furnished for work done in 1918.

Lamoure County

During the summer of 1917 the state engineer's office prepared plans and specifications for a number of reinforced concrete bridges for LaMoure County. Inspection was furnished for a portion of this work during the summer of 1918. One 12-foot bridge, the estimated cost of which was $1,471.50, was awarded for $900; another 12-foot concrete bridge, the estimated cost of which was $1,164, was awarded for $900 also; a 20-foot bridge, the estimated cost of which was $1,443, was awarded for $1,245, and a 16-foot bridge, the estimated cost of which was $1,242, was awarded for $1,078.

Logan County

The state engineer's office made surveys and furnished plans and specifications for a 50-foot bridge in Logan County, alternate plans being prepared for the steel and reinforced concrete. All bids received were rejected as being unreasonably high.

McLean County

The county superintendent of highways of McLean County made arrangements to have the bridge plans for county work checked by the state engineer's office, and in this connection plans and specifications were prepared and checked for a number of structures erected in 1917.

Pembina County

In 1917 and 1918 the state engineer's office furnished Pembina County plans and specifications for bridge work. Standard plans were used covering all the work contemplated during the two years.

Pierce County

The state engineer's office furnished plans and specifications for concrete bridges constructed in Pierce County in 1917.

Ransom County

In 1917 the state engineer's office furnished plans and specifications for two 90-foot bridges for Ransom County.

Wells County

Plans and specifications were prepared for one 40-foot bridge, three 30-foot bridges, and one 20-foot bridge. Inspection was also furnished. The total cost of the work was $15,500, the engineering and inspection amounting to $668.55 or 4.3 per cent of the cost of construction.

LAND SURVEYS.

July 1, 1916 to June 30, 1918

Newburgh Township in Steele County secured the services of the state engineer's office in making a resurvey of their township. Concrete posts were set at each section corner and the work required about three weeks time. A party of four men was employed and by the use of a plow and scraper a majority of the old corners were located. The results obtained were very satisfactory to the township and the total cost of the work was approximately three hundred dollars.

DRAINAGE

July 1, 1916 to June 30, 1918

The state engineer submits the following proposed amendment as being an improvement to our drainage laws. It is believed that the adoption of such an amendment will facilitate the handling of drainage bonds in that is eliminates certain features of our present law which are difficult, if not impossible to comply with.

A BILL

For an Act to Amend Sections 2464, 2468 and 2471 of the Compiled Laws of North Dakota for the Year 1913, formerly known as Sections 1821, 1825 and 1828, Revised Codes of 1905, which were amended by Chapter 125, Laws of 1911.

Be it Enacted by the Legislative Assembly of the State of North Dakota.

That Sections 2464, 2468 and 2471 of the Compiled Laws of the State of North Dakota for the year 1913, formerly known as Sections 1821, 1825 and 1828, Revised Codes of 1905, which were amended by Chapter 125, Laws of 1911, are hereby amended to read as follows:

Sec. 2464. *How Established.* A petition for the construction of a drain may be made in writing to the board of drain commissioners, which petition shall designate the starting point and terminus and general course of the proposed drain. If among the leading purposes of the proposed drain are benefits to the health, convenience or welfare of the people of any city or other municipality, the petition shall be signed by a sufficient number of the citizens of such municipality or municipalities to satisfy the board of drain commissioners that there is a public demand for such drain. If the chief purpose of such drain is the drainage of agricultural, meadow, grazing or other lands, the petition shall be signed by at least six or more freeholders whose property shall be affected by the proposed drain. Upon the presentation of a petition as hereinbefore provided and filing of the same, the board of drain commissioners shall, personally, as soon as practicable, proceed to examine the line of the proposed drain, and if in its opinion it is necessary for the public good, it shall enter a resolution to that effect, and shall also enter a resolution designating a competent surveyor who shall survey the line thereof and established the commencement and terminus and determine the route, width, length and depth thereof.

Provided, that the board of drain commissioners shall require a bond from the petitioners in sum sufficient to pay all expenses of the surveys and of the drainage commissioners if it should appear that the proposed drain would cost more than the amount of the benefit to be derived therefrom. For the purpose of making examinations or surveys the board of drain commissioners, surveyors and their employees may enter upon any land traversed by any such proposed drain or upon other lands when necessary. Such surveyor shall prepare profiles, plans and specifications of the proposed drain, an estimate of the cost thereof and a map or plat

of the lands to be drained, in triplicate, showing the regular subdivisions thereof, one copy of which shall be filed in the office of the county auditor in the county in which the drain is proposed to be constructed, one copy with the board of drain commissioners, and the third copy in the state engineer's office, all subject to inspection. In locating a drain a board of drain commissioners may, under the advice of the surveyor, vary from the lines described in the petition as it seems best. When the line proposed is along highways already established the drain shall be located at a sufficient distance from the center of such highway to permit a good road along the central line thereof. When the length of the line described in the petition does not give sufficient fall to drain the land sought to be drained, the board of drain commissioners may extend the drain below the outlet named in the petition far enough to obtain a sufficient fall and outlet. Drains shall as far as practicable be located on dividing lines between sections or regular subdivisions thereof, but the general utility of the drain must not be sacrificed to avoid crossing any tract of land in such direction as the board of drain commissioners find advisable. Upon the filing of the surveyor's report with the board of drain commissioners, the board shall fix a date for hearing objections to the petition; at least ten days' notice of such hearing shall be given by causing five notices to be posted along the line of the proposed drain at such points as will be likely, in the opinion of the board, to secure the greatest publicity; such notices shall contain a copy of the petition and a statement of the date of filing of the surveyor's report with the board and the date when the board will act upon the petition, and shall be signed by the members of the board, or a majority thereof. All persons whose lands may be affected by any such drain may appear before the board of drain commissioners and fully express their opinion and offer evidence upon the matters pertaining thereto. Should the owners of two-thirds of the lands subject to assessment for the construction of the proposed drain so desire, they may, by a petition in writing, request and secure the attendance at the above hearing of the state engineer, or one of his assitants, and at their request he shall be heard by the board upon all matters connected with said drain.

Sec. 2468. *Assessment of benefits subject to review.* The assessment of benefits provided for in this chapter shall be subject to review, and ten days' notice of the time when such assessment will be reviewed by the board of drain commissioners, shall be given by publishing in some newspaper of general circulation in the county, and printed notices, not less than five in all and at least one in each township or municipality interested in such drain shall be posted in such township and municipality as such points as may be likely, in the opinion of the board, to secure the greatest publicity for such notices. At the time appointed such board shall proceed to hear all complaints relative to such assessment and correct or confirm the same. Should the owners of two-thirds of the land subject to assessment so desire, they may secure and require the attendance of the state engineer, or one of his assistants, at the hearing upon the assessment by presenting to him a written petition requesting his

attendance, and upon the hearing by the board they shall, upon the request of persons so petitioning, give a hearing to such state engineer in connection with the examination of the proposed assessments. For his services the state engineer shall be allowed ten dollars per day and actual necessary expenses during the time he is engaged on the work, and the same shall be charged against the drain as a part of the cost of construction. All moneys received by the state engineer for his work shall be paid into the state treasury and credited to the general fund.

Sec. 2471. *Notice of letting contracts and review of assessments.* After completing the percentage assessment as hereinbefore provided, the board of drain commissioners shall without delay divide the line thereof into convenient divisions for construction, make diagrams of the same with specifications of the width of excavation at the bottom, the slope of the sides, and such other matters as may be necessary for the proper construction of the drain, and set suitable stakes in such places as may be necessary. Such board shall give at least ten days' notice of the time when they will meet parties for the purpose of letting contracts for such construction. Such notice shall be published in some newspaper of general circulation in the county and printed notices not less than five in all and at least one in each township or municipality interested in such drain shall be posted in such township or municipalities at such points as will be likely, in the opinion of the board, to secure the greatest publicity for such notice. The hearing upon the review of the percentage assessments, and the letting of the contract for the construction may be held on the same date, and notice of the hearing and of the letting of the contract may be combined in one notice if the board shall so determine. All hearings by the board shall be held in the court house at the county seat of the county in which the drain is situated.

COUNTY DRAINAGE WORK

Considerable drainage work has been done in Walsh, Grand Forks, Traill, Cass, Richland, Sargent, and Ransom Counties during the biennial period just closed.

LaMoure County—Verona Drain

The state engineer's office had but one request for aid in connection with drainage work during the biennial period just closed. The office was called upon to prepare plans and specifications for the drainage of a number of sloughs and potholes in the vicinity of Verona, LaMoure County. The proposed project benefits 1,463 acres of land and the estimated cost per acre amounts to $15.00. The contract price for the work was $20,000. This project is unique in North Dakota in that a large amount of tile is being used and there is but little open ditch work. On July first construction work had not been started.

EXAMINATION OF SCHOOL LANDS FOR COAL

The constitution provides that no coal bearing state-owned land shall be sold. The duty of classifying state-owned lands has been delegated to the state engineer, such classifications to be made at the direction of the Board of University and School Lands.

During the past biennial period, at the request of the Board of University and School Lands, the work of classifying lands in Emmons, Golden Valley, McLean, Mountrail and Oliver Counties has been accomplished. The field work was largely done by Harris Robinson and J. N. Forister.

The lands are classified as "coal land" or "not coal land." Reports showing in detail the acreage, surface descriptions, coal indications, and distance from the nearest towns of each subdivision have been filed with the land commissioner. In each report filed the state engineer has called attention to the fact that such investigations as are possible under the terms of the state laws can not be other than superficial. In this connection consideration of the recommendation included in this report and also in the Seventh Biennial Report is suggested.

The data used as a basis in making the investigations was secured by making careful field investigations from logs of wells, the proximity of known outcrops and mines, and from data secured from state and geological reports, the reports of the State Geological Survey being of especial value.

The table submitted gives summaries of the work done.

SCHOOL LANDS EXAMINED FOR COAL
June 30, 1918

County	Acreage Inspected	Coal Land	Not Coal Land	Percentage of Coal Land
Burke	29,958.28	16,077.11*	13,881.17	53.66
Burleigh	31,867.42	6,299.44*	25,567.98	19.76
Divide	51,594.78	11,323.82*	40,270.96	21.94
Dunn	59,811.12	47,651.12*	12,160.00	79.76
Emmons ***	24,832.57	.....	24,832.57	00.00
Golden Valley ***	38,513.53	38,513.53	.....	100.00
McLean ***	85,907.05	37,475.81	48,431.24	43.63
Mercer	50,847.67	38,692.32*	12,155.35	76.09
Morton	129,137.82	65,292.82*	63,845.00	50.56
Mountrail ***	70,686.05	28,183.45	42,502.60	39.87
Oliver ***	25,673.66	19,200.00	6,473.66	74.79
Sheridan **	.....	.....	.....	
Stark	47,836.82	29,826.34*	18,010.48	62.35
Williams	72,888.21	50,545.38*	22,342.83	69.34
Total	719,554.98	389,081.14	330,473.84	

* Includes acreage recommended held for further investigation.
** No land in Sheridan County classified as coal land.
*** Counties classified July 1, 1916 to June 30, 1918.

RIVER RECORDS

By E. F. CHANDLER

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By permission of the United States Geological Survey, with which the office of the State Engineer has been cooperating in this work, the following tables of flow of the more important or typical streams in North Dakota and the Red River Valley have been selected and compiled from the records of the Survey for publication herein. The larger portion of the expense entailed in the continuous maintenance of these records has been provided for by Federal appropriations, but a part of the expense, (in particular, the payment of gage-observers in each locality) has from time to time been carried appropriately from state funds by the states concerned.

Less such work is maintained in North Dakota than in some other states where there is a greater opportunity for irrigation, for water-power development, or for navigation, where land drainage has been more thoroughly extended, or where water supplies for municipal and domestic use have been more completely investigated. But development in all these lines is often proposed or discussed in North Dakota, and also flood protection and various other matters intimately related to the flow of the streams. It is impossible to make any reasonable plans for progress in any such matter without assuming fairly definite knowledge of the amount of water usually available in the streams. This varies from year to year very much more than the rainfall varies, and figures deduced for one region cannot be transferred to a far-distant region; thus if there is to be well-planned development along any of these lines in North Dakota it is absolutely necessary that there be available for use a reasonably comprehensive knowledge of the facts concerning the streams in our own state through a fairly long term of years. This is therefore a field of survey and investigation that especially concerns the office of the state engineer.

In North Dakota there are few advantageous opportunities for the use of water-power, and there are also difficulties hindering some other forms of stream use in some localities. Therefore it often happens that the evidence given in the river records is merely negative evidence, which, instead of assisting in the development of some project, absolutely forbids the making of any effort to carry it through. At first thought, the records seem in such case to have been of little use to the people of the state; but it is as truly a benefit to a locality to prevent the waste of money in efforts to carry through some ill-advised and unprofitable scheme which can terminate only in bankruptcy, as it is to assist in the extension of profitable plans in which the money of the people might well be expended.

The methods followed in this work were described in detail in the First Report of the North Dakota State Engineer, (1905) pages 49 to 62, and also in the Second Report (1907), pages 47 to 49. A discussion of the conclusions which can be drawn from these records in regard to the available surface water supply in different parts of the state appears in the Third Report (1909), pages 53 to 66, although some of the conclusions there stated could now be properly modified slightly, on the basis of the ten years of additional records now available. The methods used may be stated briefly thus:

At each "river station" or "gaging station" a gage is established and an observer appointed who makes regular observations and records of the height of the water; if the river is varying at all in height, these are usually made daily, and sometimes several times a day, especially if during flood or other unusual condition the height is changing quickly. The gage-heights are recorded in feet and tenths of a foot. It is intended to place the gage so that its zero shall be below the lowest known low water, and at most of the stations the zero has been set below the bottom of the river; but the height of the floods is easily seen by a comparison between the maximum gage-heights recorded during the floods and the minimum gage-heights records during low water periods.

At suitable intervals, an engineer or assistant (called in this work a "hydrographer"), equipped with appropriate meters and other instruments, makes measurements of the discharge (i. e., of the actual number of gallons of water per day flowing by the gage) and records the discharge and gage-height found at that time. It is thus known how much water will be flowing whenever the river happens to be at that same gage-height again, provided the river channel does not suffer change in the meantime. In this region, almost all channels change gradually; but if the changes are slow, by the use of suitable corrections the records are kept free from seriously large error.

When enough such measurements have been secured at different heights of the river (low, medium, and flood), it becomes possible by interpolation to determine closely how much water flowed by the gage at any recorded foot and tenth of gage-height between lowest and highest stages. Upon this basis, from the record of daily gage-heights that has been secured by the observer a computation is made of the actual daily quantities that have flowed by the gage, and these can be tabulated in any form needed for reference. In the following pages, these results have been arranged as tables of "Monthly Discharge," showing for each month the average flow (through the twenty-four hours) for that day of the month when the flow was the greatest or maximum, the flow for the minimum day, and the mean flow or average for the entire month taken as a whole.

All figures of discharge given here are in "second-feet." One second-foot is a flow that carries by the observer one cubic foot of water each second; a rapid current in a small channel, or a slow current in a large channel, can carry the same amount of water past the observer each second. For example, a stream six feet wide and two feet deep flowing with a velocity of five feet per second, and a stream twenty feet wide and three feet deep flowing with a velocity of one foot per second, would each carry sixty second-feet of water.

One second-foot amounts to 646,272 gallons per day, and will cover almost two acres one foot deep in twenty-four hours.

As successive years vary very much, an absolutely exact record of the quantity of flow of a river through one year would not tell how much might flow the next year; it sometimes happens that the flow of one year is five or ten, or even twenty, fifty, or a hundred times as great as the total entire flow of a previous year; nor can these records be blindly transferred to adjoining rivers, for no two rivers are precisely alike in their conditions and behaviour, so that the records of as many streams as practicable should be secured if dependence is to be placed on them for all uses. Therefore, rather than to spend a large appropriation in making a very precise record of a single stream for a single year, it is much more advantageous to extend the work to as many streams through as long a period of years as the available funds will possibly permit; provided of course that care is taken that the work and attention devoted to each station are not too greatly reduced so as to bring about a disproportionate or inexcusably great loss of accuracy.

The column headed "accuracy" in the tables of monthly discharge applies to the mean flow for the month, but not always to the maximum or minimum (which might have been affected by accidental error entering for only a single day, such for example as the brief absence of the observer.) It depends on the reliability of the daily observer, on the permanency of the stream channel and of the gage, and upon the number and consistency of the measurements of discharge. After a sufficient assortment of measurements at different heights have been secured. few would be needed in following years if the channel is absolutly permanent, and less than during the first few seasons even if channels are gradually changing according to the fashion of most North Dakota streams.

The mean for any month marked A in these tables may properly be assumed as accurate within five per cent; of any month marked B, within 10 per cent; C, within 15 per cent; D, within 25 per cent; E indicates a rough estimate which is presumably within 50 per cent of the truth, although in the case of some of the winter month estimates marked E it is possible that the flow is but a small fraction of the estimated figure; however it con be stated with reasonable assurance that in none of these cases could the flow have been more than 50 per cent greater than the estimate.

Included in the following pages are summaries of the records of these streams:

Red River at Grand Forks, N. D.
Red River at Fargo, N. D.
Red Lake River at Crookston, Minn.
Thief River near Thief River Falls, Minn.
Mouse River at Minot, N. D.
Grand River (North Branch) at Haley, N. D.
Cannon Ball River near Stevenson, N. D.
Heart River near Richardton, N. D.
Knife River near Broncho, N. D.

The tables run from the close of the tables published in the last biennial report of the State Engineer (usually September 1, 1916) to August 31, 1918. The portions of the summaries for the late fall of 1917 and for the year 1918 have been extracted from the official records in advance of the completion of the final computations of the season's work as made for publication by the U. S. Geological Survey, and are therefore to be considered only as "preliminary computations" still subject to minor revisions, and some other small parts of the tables are also taken from the preliminary computations. But in no case is it to be expected that the final revisions will introduce any large changes in the figures here given, and through most of the tables the changes will be so small as to be inappreciable, or final publication will be without change.

Similar summaries of the most important river records for this region can be found in the following reports:

1903-1904, in Third Report of North Dakota Geological Survey.
1905-1906, in Second Report of North Dakota State Engineer.
1907-1908, in Third Report of North Dakota State Engineer.
1909-1910, in Fourth Report of North Dakota State Engineer.
1911-1912, in Fifth report of North Dakota State Engineer.
1913-1914, in Sixth report of North Dakota State Engineer.
1915-1916, in Seventh Report of North Dakota State Engineer.

Complete records are published from year to year in the Water Supply Papers Series of the United States Geological Survey, in which all the methods and other details are also fully explained.

These summaries and records and many other less important ones are on file in the office of the State Engineer at Bismarck. The original data of every kind on which all these results and summaries are based are kept in the Washington office of the U. S. Geological Survey. Copies of all the data are also kept on file in the office of the resident hydrographer of the Survey, under whose general supervision all the field work has been done and the computations carried out; this is E F. Chandler, at the post-office address University, N. D. On request to any of these offices full information can be obtained if desired by any one who has reason for interest in any of these records or investigations.

RED RIVER AT GRAND FORKS, N. D.

Gagings of the flow of the Red River of the North at Grand Forks, N. D. were begun by the U. S. Geological Survey in 1901, but a gage height record was kept under the direction of the Corps of Engineers (War Department), by whom the dredging fleet was operated for the improvement of the river, for about twenty years previously, and a few discharge measurements were made by them; thus fairly good run-off summaries begin with the year 1882. The gaging station is located below the confluence of the Red and Red Lake Rivers. The total drainage area is 25,000 square miles, of which about half is in Minnesota.

The tables of discharge, based on the measurements in the list below and on a hundred and four measurements made during the sixteen preceding years, are fairly accurate through the entire year.

MEASUREMENTS OF DISCHARGE.

Date	Name of Hydrographer	Gage-height	Discharge
9-30-1916	Wardwell and Dale	10.09	3,450
12-22-1916	Chandler and Dale	8.09*	1,280
1-18-1917	Wardwell and Dale	8.16*	1,260
2-24-1917	Dale and Wardwell	7.34*	850
3-19-1917	Wardwell and Dale	7.83*	1,000
4-16-1917	Wardwell and Dale	20.48	10,550
5- 7-1917	Wardwell and Hulteng	14.48	5,990
7-11-1917	Chandler and Hulteng	6.11	1,410
10-16-1917	Chandler and Noble	3.81	501
12-15-1917	Chandler and Noble	4.75*	469
2-23-1918	H. A. Noble	4.01*	186
3-30-1918	Chandler and Noble	10.48	4,170
5- 4-1918	H. A. Noble	6.71	1,800
6-21-1918	Chandler and Hulteng	6.58	1,690
7-22-1918	E. F. Chandler	4.25	702

* Frozen, mean thickness of ice from 0.8 feet to 2.4 feet at different times of measurment.

MONTHLY DISCHARGE OF RED RIVER AT GRAND FORKS, N. D.

	Month	Maximum	Minimum	Mean	Accuracy
1916	September	5,010	3,180	3,970	B
	October	3,480	2,720	3,050	A
	November	3,060	2,390	2,770	C
	December	2,440	1,300	1,780	C
1917	January	1,390	1,050	1,220	C
	February	1,050	824	921	C
	March	8,760	920	1,760	C
	April	20,200	6,700	11,700	C
	May	6,780	2,830	4,780	A
	June	2,780	1,620	2,190	A
	July	1,520	824	1,180	A
	August	824	473	508	B
	September	897	395	562	B
	October	720	501	588	A
	November	972	622	797	A
	December	654	305	447	C
1918	January	326	204	266	D
	February	270	186	210	D
	March	4,480	300	1,570	D
	April	3,520	1,170	1,810	A
	May	2,860	1,440	1,850	A
	June	2,800	1,210	1,960	A
	July	1,170	687	869	A
	August	1,130	654	751	B

Maximum gage-heights, 33.9 feet April 8, 1917; 11.3 feet March 28, 1918; maximum ever recorded, 50.2 feet April 10, 1897.

Minimum gage-heights, 8.8 feet October 23, 1916; 7.3 feet February 24, 1917; 3.4 feet September 4, 1917; 4.0 feet February 21, 1918; 4.2 feet July 24, 1918; minimum ever recorded, 2.6 feet February 10, 1912.

RED RIVER AT FARGO, N. D.

The gaging station on the Red River of the North at Fargo, N. D. was established May 27, 1901. The drainage area above this point is 6,020 square miles, of which 1,750 square miles is in North Dakota, 500 square miles in South Dakota, and 3,770 square miles in Minnesota.

In September, 1914, the gage location for the Geological Survey was changed from the Front Street bridge to a point immediately above the Island Park dam. The zero of the gage at Island Park is about one foot below the crest of the dam, and is so related to the zero of the Front

Street gage that at flood stages, when the dam is drowned out and causes no irregularity in the surface slope of the river, readings on the Front Street gage are numerically about 10.2 feet greater than on the Island Park gage now used; at low stage, a reading of 7.0 feet at Front Street indicates approximately the same quantity of flow as a reading of 2.0 feet on the Island Park gage.

The tables of discharge, based on the measurements in the list below and seventy-four measurements made during the sixteen preceding years, are unusually accurate, except that during the first few days of the spring flood, when the ice retards the current, the effect of the ice has not been accurately determined so that the figures of flow are based for a few days in part upon estimates of this effect.

MEASUREMENTS OF DISCHARGE

Date	Name of Hydrographer	Gage-height	Discharge
12-23-1916	L. R. Dale	2.88	513
4- 7-1917	E. F. Chandler	10.64	4,130*
4-14-1917	T. M. Wardwell	5.22	2,320
4-15-1917	T. M. Wardwell	5.03	2,210
6-13-1917	A. Hulteng	3.24	786
7-14-1917	E. F. Chandler	2.29	323
8-16-1917	E. F. Chandler	1.69	143
11- 3-1917	E. F. Chandler	1.52	108
4- 4-1918	A. Hulteng	2.33	451
4-20-1918	A. Hulteng	2.03	357
5-10-1918	E. F. Chandler	2.17	378
7- 2-1918	A. Hulteng	2.03	321
8-27-1918	E. F. Chandler	1.58	134

*Not an accurate measurement.

MONTHLY DISCHARGE OF RED RIVER AT FARGO, N. D.

Month		Maximum	Minimum	Mean	Accuracy
1916	September	1,510	1,020	1,250	A
	October	1,240	876	1,030	A
	November	876	.....	631	B
	December	.....	.....	488	D
1917	January	.....	.....	419	C
	February	.....	.....	363	D
	March	4,640	.....	924	D
	April	5,200	2,130	3,240	C
	May	2,800	976	1,810	A
	June	976	508	722	A
	July	486	231	330	A
	August	231	92	144	A
	September	142	42	90	A
	October	156	70	108	A
	November	185	70	132	A
	December	154	.....	86	B
1918	January	.....	.....	42	D
	February	.....	.....	34	D
	March	812	.....	377	B
	April	754	323	401	A
	May	812	296	472	A
	June	603	296	468	A
	July	365	182	277	A
	August	289	164	218	B

Maximum gage-heights, 14.0 feet April 4, 1917; 3.1 feet March 30, 1918; maximum ever recorded, 19.9 feet (30.1 on Front Street gage) April 6, 1916.

Minimum gage-heights, 2.5 feet November 15, 1916; 1.2 feet September 15, 1917; 1.0 feet February 11, 1918; 1.5 feet July 26, 1918; minimum ever recorded, 5.7 feet on Front Street gage November 1, 1910.

RED LAKE RIVER AT CROOKSTON, MINNESOTA

The Red Lake River is the principal tributary of the Red River, and its average flow is very nearly equal to that of the Red River itself above the confluence with the Red Lake River; hence it is an important factor in the behaviour of the lower Red River. The gaging station on the Red Lake River at Crookston, Minnesota, was established May 19,

MEASUREMENTS OF DISCHARGE.

Date	Name of Hydrographer	Gage-height	Discharge
10- 9-1916	E. F. Chandler	5.33	1,220
12-28-1916	T. M. Wardwell	5.40*	620
1- 6-1917	T. M. Wardwell	5.11*	419
2-12-1917	T. M. Wardwell	5.40*	377
3-17-1917	T. M. Wardwell	5.90*	450
4- 2-1917	T. M. Wardwell	10.50	3,050
7- 9-1917	E. F. Chandler	4.07	647
8- 2-1917	E. F. Chandler	3.22	304
10-18-1917	E. F. Chandler	3.20	310
11-17-1917	H. A. Noble	3.20	381
12-22-1917	H. A. Noble	3.43*	98
2-18-1918	H. A. Noble	3.56*	62
4-13-1918	E. F. Chandler	4.19	671
7-12-1918	E. F. Chandler	3.60	440

*Frozen; mean thickness of ice, 0.7 to 1.6 feet at different times of measurement.

MONTHLY DISCHARGE OF RED LAKE RIVER AT CROOKSTON, MINNESOTA.

	Month	Maximum	Minimum	Mean	Accuracy
1916	June	.....	.....	3,170	D
	July	.....	.....	2,790	D
	August	2,210	1,040	1,470	A
	September	2,280	.....	1,620	C
	October	1,380	865	1,090	A
	November	1,440	.....	871	B
	December	.....	.....	621	C
1917	January	.....	.....	387	C
	February	.....	.....	430	C
	March	.....	.....	772	C
	April	5,320	2,280	3,400	B
	May	1,880	1,050	1,440	A
	June	1,050	740	880	A
	July	740	353	644	A
	August	346	78	274	A
	September	239	95	160	C
	October	310	242	270	B
	November	342	245	288	B
	December	.....	.....	196	E
1918	January	.....	.....	128	E
	February	.....	.....	91	E
	March	1,500	150	671	D
	April	1,760	242	666	B
	May	910	500	747	A
	June	1,050	440	733	A
	July	.....	.....	392	D
	August	460	292	377	B

Maximum gage-heights, 11.9 feet April 11, 1917; 6.2 feet April 1, 1918; maximum ever recorded, 25.2 feet April 11, 1897.

Minimum gage-heights, 3.3 feet November 15, 1916; 2.4 feet August 30, 1917; 3.0 feet April 8, 1918; minimum ever recorded, 2.2 feet October 9, 1911.

1901. The drainage area above Crookston is 5,320 square miles, and there are no considerable tributaries between this point and the mouth of the

river at Grand Forks, so that almost the entire discharge is shown here.

An automatic gage is maintained at this point which secures a continuous record of the hourly variations of flow.

The tables of discharge are based on the measurements in the list below and a hundred and eight measurements in the sixteen preceding years. Except during a few short interruptions, they have excellent accuracy through the open season and fair through the winter, although by the operation of the power plants above the gage there are sometimes abrupt variations in flow which cause some unimportant inconsistencies or discrepancies.

THIEF RIVER NEAR THEIR RIVER FALLS, MINNESOTA.

The gaging station on the Thief River was established July 1, 1909. It is located about six miles above the confluence with the Red Lake River at Thief River Falls of the Thief River, which is one of the two most important tributaries of the Red Lake River, and is a typical source of occasional spring floods. The drainage area above the station is 1,010 square miles. On account of lack of funds, observations at this station were discontinued September 30, 1917.

The tables of discharge are based on the measurements in the list below and on thirty-five measurements made in the previous eight years, and are excellent in accuracy except during the winter (when however the total discharge is very small and during a few days of the early spring break-up when the effect of the ice in raising the gage-height during the first of the flood is not readily determinable.

MEASUREMENTS OF DISCHARGE.

Date	Name of Hydrographer	Gage-height	Discharge
9- 8-1916	E. F. Chandler	6.13	405
12-30-1916	T. M. Wardwell	4.68*	1.5
2-10-1917	L. B. Dale	3.54*	1.4
3-17-1917	L. B. Dale	4.05*	0.7
4- 6-1917	T. M. Wardwell	9.77	845
6-19-1917	E. F. Chandler	4.61	32
9- 6-1917	E. F. Chandler	3.81	1.6

*Frozen; ice thickness from 1.2 feet to 1.5 feet at different times of measurement.

MONTHLY DISCHARGE OF THIEF RIVER NEAR THIEF RIVER FALLS, MINN.

	Month	Maximum	Minimum	Mean	Accuracy
1916	September	710	70	372	A
	October	308	86	160	A
	November	187	23	109	B
	December	26	3	13	D
1917	January	.....	.....	5	E
	February	.....	.....	3	D
	March	.....	.....	4	D
	April	2,550	32	831	C
	May	322	37	122	A
	June	52	15	33	A
	July	40	7	19	A
	August	6	0.5	2.1	C
	September	9	0.7	3.4	C

Maximum gage-heights, 7.2 feet September 14, 1916; 12.6 feet April 11, 1917; maximum ever recorded, 14.5 feet April 23, 1916.

Minimum gage-heights, 4.6 feet November 27, 1916; 3.4 feet March 20, 1917; 3.6 feet August 25, 1917; minimum ever recorded (in open season) 3.5 feet August 2, 1911.

MOUSE RIVER AT MINOT, N. D.

The gaging station on the Mouse River at Minot, N. D. was established May 5, 1903. The drainage area above this point is 8,400 square miles, of which three-fourths is in Canada and one-fourth in North Dakota. The gage is located directly north of the Great Northern roundhouse, so that the gage-heights refer to the water level of the river at that point, which is the same as at the Great Northern Railway bridge.

The tables of discharge, based on the measurements in the list below and on fifty-eight measurements made during the previous fourteen years, are fairly accurate for all seasons.

MEASUREMENTS OF DISCHARGE.

Date	Name of Hydrographer	Gage-height	Discharge
9- 5-1916	E. F. Chandler	4.59	23
12-28-1916	L. B. Dale	4.39	7.5
4-21-1917	E. F .Chandler	9.08	901
7-16-1917	E. F. Chandler	4.66	39
4- 7-1918	E. F. Chandler	6.27	278
4-20-1918	E. F. Chandler	5.67	149
8- 9-1918	E. F. Chandler	3.95	1.6

MONTHLY DISCHARGE OF MOUSE RIVER AT MINOT, N. D.

	Month	Maximum	Minimum	Mean	Accuracy
1916	September	33	23	26	B
	October	29	23	25	C
	November	.....	.....	32	C
	December	.....	.....	22	D
1917	January	.....	.....	12	D
	February	.....	.....	5.4	D
	March	.....	.....	74	D
	April	1,280	452	912	B
	May	1,250	253	801	B
	June	253	113	196	B
	July	113	24	64	C
	August	24	0.8	13	C
	September	0.8	0.3	0.5	D
	October	.....	.....	5.4	C
	November	.....	.....	33	C
	December	.....	.....	16	C
1918	January	.....	.....	4.3	C
	February	.....	.....	9	C
	March	.....	.....	281	D
	April	750	99	251	B
	May	317	4	100	B
	June	67	3	20	B
	July	6	1.6	3.6	C
	August	8	2.4	4.8	C

Maximum gage-heights, 11.4 feet April 29, 1917; 8.5 feet March 30, 1918; maximum ever recorded, 21.9 feet April 20, 1904.

Minimum gage-heights, 4.6 feet October 15, 1916; 4.1 feet February 10, 1917; 3.0 feet September 28, 1917; 4.0 feet July 20, 1918.

GRAND RIVER (NORTH BRANCH) AT HALEY, N. D.

The gaging station on the North Branch of the Grand River at Haley, N. D. was established May 11, 1908. The drainage area above this point is 500 square miles. The tables of discharge are based on the measure-

ment listed below and sixty-six measurements made in the previous nine years, but are only approximate during most of the season, because of the lack of discharge measurements so that minor changes in the channel conditions have not been determined recently, and because gage observations are usually made only twice each week.

MEASUREMENT OF DISCHARGE.

Date	Name of Hydrographer	Gage-height	Discharge
8-23-1917	E. F. Chandler	0.86	0.2

MONTHLY DISCHARGE OF GRAND RIVER (NORTH BRANCH) AT HALEY, NORTH DAKOTA.

Month		Maximum	Minimum	Mean	Accuracy
1916	August	11	1.3	3.3	D
	September	.....	.....	1.3	D
	October	.....	.....	1.3	D
	November	.....	.....	0.9	E
	December	.....	.....	0.6	E
1917	January	.....	.....	0.4	E
	February	.....	.....	0.3	E
	March	.....	.....	1.4	C
	April	602	.....	164	C
	May	22	3	10	C
	June	22	0	4.3	D
	July	0.6	0.2	0.3	D
	August	0.6	0.2	0.3	D
	September	.....	.....	0.2	D
	October	.....	.....	0.2	D
	November	.....	.....	0.4	D
	December	.....	.....	0.4	E
1918	January	.....	.....	0.3	E
	February	.....	.....	0.6	E
	March	922	.....	220	C
	April	187	5	36	C
	May	3.3	0	1.2	D
	June	3.3	0	0.8	D
	July	2.3	0.2	1.6	D
	August	2,260	0.9	107	D

Maximum gage-heights, 6.2 feet April 5, 1917; 8.2 feet March 18, 1918; maximum ever recorded, 9.8 feet June 13, 1915.

Minimum gage-heights, 1.0 feet October 10, 1916; 0.8 feet September 14, 1917; 0.7 feet June 21, 1918; minimum ever recorded, 0.5 feet September 5, 1912.

CANNON BALL RIVER NEAR STEVENSON, N. D.

The gaging station on the Cannon Ball River was established June 10, 1903, at the post office of Stevenson, which was at that time located about thirty miles above the mouth of the Cannon Ball River and four miles above the mouth of Dogtooth Creek, at a point four miles south of the present postoffice and railway station, Timmer, N. D. Because of lack of available observer, the station was discontinued two years, and was re-established August 9, 1911, about a mile upstream from the original location, at M. H. Burdick's ranch. In August 1915 the station was transferred back to the original location at the old Stevenson ranch, now occupied by F. H. Bingenheimer. The datum planes of the gages at the two locations are so related that readings on the gage at Burdick's (used 1911 to 1915) are numerically approximately 10 feet more than gage

readings at the original and present location. The drainage area above this point is 3,650 square miles.

The tables of discharge, based on the measurements in the list below and sixty-five measurements in previous years, are fairly accurate except during the winter and first few days of the spring break-up. At such times, because the effect of the ice has not been definitely measured, the figures are scarcely better than estimates.

MEASUREMENTS OF DISCHARGE.

Date	Name of Hydrographer	Gage-height	Discharge
9-21-1916	E. F. Chandler	2.88	13
10-24-1916	T. M. Wardwell	2.90	13
4-12-1917	L. B. Dale	6.45	1,490
5-22-1917	A. Hulteng	3.58	92
6-20-1917	A. Hulteng	3.29	71
7-25-1917	E. F. Chandler	2.76	7.4
8-25-1917	E. F. Chandler	2.60	2.9
10-31-1917	H. A. Noble	2.71	4.5
4- 2-1918	A. Hulteng	4.40	329
5-31-1918	A. Hulteng	3.49	121
6-26-1918	A. Hulteng	3.01	44
8-30-1918	E. F. Chandler	2.58	1.5

MONTHLY DISCHARGE OF CANNON BALL RIVER NEAR STEVENSON, NORTH DAKOTA.

Month		Maximum	Minimum	Mean	Accuracy
1916	September	240	8	27	A
	October	14	8	10	B
	November	.....	.....	21	D
	December	.....	.....	13	E
1917	January	.....	.....	10	E
	February	.....	.....	10	E
	March	.....	.....	65	E
	April	.....	.....	974	C
	May	302	71	134	B
	June	134	47	73	B
	July	47	4	18	B
	August	8	2	2.8	C
	September	23	2	3.5	C
	October	5	1.5	2.5	B
	November	14	5	8.4	A
	December	.....	.....	6	E
	January	.....	.....	5	E
	February	.....	.....	20	E
	March	3,500	.....	932	C
	April	.....	.....	216	D
	May	147	34	69	B
	June	.....	.....	39	D
	July	23	5	11	C
	August	23	3	7	C

Maximum gage-heights, 9.4 feet April 5, 1917; 10.5 feet March 18, 1918; maximum ever recorded, 11.2 feet March 18, 1916.

Minimum gage-heights, 2.8 feet October 11, 1916; 2.4 feet October 8, 1917; minimum ever recorded, 1.4 feet October 23, 1907.

HEART RIVER NEAR RICHARDTON, N. D.

The gaging station on the Heart River was established May 18, 1903, and was located at the steel highway bridge ten miles south of Richardton, N. D. On September 4, 1911, it was transferred one mile downstream, and the gage-datum was changed so as to add approximately 20

feet to all gage-readings; thus a reading of 25 feet on the present gage indicates approximately 5 feet on the original gage. The drainage area above this point is 1,250 square miles.

The tables of discharge, based on the measurements in the list below and on forty-six measurements in the thirteen preceding years, are only approximate through most of the season, for the reason that slight changes in the relation between gage-height and discharge have frequently been caused by the construction of many small beaver dams in the river near the station, and the measurements of discharge have not been made often enough to fix completely all the corrections due on this account.

MEASUREMENTS OF DISCHARGE.

Date	Name of Hydrographer	Gage-height	Discharge
5-16-1916	H. Robinson	25.40	60
9- 3-1916	E. F. Chandler	24.97	4.6
3-30-1917	V. H. Sprague	33.48	1,560
7-16-1917	V. H. Sprague	24.98	7.7
8-28-1917	E. F. Chandler	25.24	0.4
4-11-1918	L. B. Dale	25.39	37
8-28-1918	E. F. Chandler	25.87	88

MONTHLY DISCHARGE OF HEART RIVER NEAR RICHARDTON, N. D.

	Month	Maximum	Minimum	Mean	Accuracy
1916	May	256	45	97	D
	June	1,070	17	127	C
	July	138	2	51	D
	August	55	0.6	7.3	D
	September	24	4	14	D
	October	28	17	22	C
	November	20	.....	12	C
	December	.....	.....	7.5	E
1917	January	.....	.....	4.9	E
	February	.....	.....	2.9	E
	March	.....	.....	222	D
	April	1,850	256	814	B
	May	226	41	86	C
	June	65	17	35	C
	July	28	2.5	11	C
	August	2.5	0.4	0.9	C
	September	2.5	0.6	1.5	D
	October	4.5	0.8	2.7	C
	November	8.5	2.5	5.2	C
	December	.....	.....	2.7	D
1918	January	.....	.....	1.6	D
	February	.....	.....	9.1	D
	March	1,700	17	441	D
	April	390	24	75	C
	May	36	11	19	D
	June	45	2	17	D
	July	14	2	6	D
	August	2,090	3	222	C

Maximum gage-heights, 33.7 feet April 1, 1917; 33.2 feet March 20, 1918; maximum ever recorded, 45.9 feet June 10, 1906.

Minimum gage-heights, 24.6 feet August 21, 1916; 24.9 feet August 2, 1917; minimum ever recorded, 23.3 feet August 2, 1911.

KNIFE RIVER NEAR BRONCHO, N. D.

The gaging station on the Knife River is about twenty miles north of Hebron, N. D., in Section 4, Township 142, Range 90, at the ranch of C. D. Smith, the former location of Broncho post-office. The drainage area above the station is 1,260 square miles.

The tables of discharge, based on the measurements in the list below and forty-one measurements made in the fourteen previous years, are only fair in accuracy bcause the number of discharge measurements in recent years has been too few to define accurately the ordinary changes in channel and station conditions; and the figures for winter are merely estimates.

MEASUREMENTS OF DISCHARGE.

Date	Name of Hydrographer	Gage-height	Discharge
9- 1-1916	E. F. Chandler	3.44	8.8
3-31-1917	V. H. Sprague	16.71	1,590
7-16-1917	V. H. Sprague	3.49	10
4-12-1918	L. B. Dale	4.12	26
8-28-1918	E. F. Chandler	5.01	123

MONTHLY DISCHARGE OF KNIFE RIVER NEAR BRONCHO, N. D.

	Month	Maximum	Minimum	Mean	Accuracy
1916	August	33	7	14	B
	September	11	7	8	C
	October	21	11	17	C
	November	.....	.....	12	D
	December	.....	.....	9	E
1917	January	.....	.....	5	E
	February	.....	.....	4	E
	March	1,480	.....	138	E
	April	1,320	164	539	C
	May	124	27	45	B
	June	47	21	30	B
	July	21	4	11	B
	August	11	4	6	C
	September	.....	.....	4	C
	October	11	4	9	C
	November	.....	.....	11	C
	December	.....	.....	5	E
1918	January	.....	.....	5	E
	February	.....	.....	10	E
	March	2,800	.....	582	C
	April	374	27	95	C
	May	54	16	21	D
	June	27	7	17	D
	July	260	4	26	C
	August	4,320	7	737	C

Maximum gage-heights, 16.0 feet March 31, 1917; 15.8 feet March 18, 1918; maximum ever recorded, 24.0 feet June 26, 1914.

Minimum gage-heights, 3.4 feet September 25, 1916; 3.3 feet September 15, 1917; minimum ever recorded, 3.1 feet September 18, 1908.

LONG RECORDS

Complete records through the entire year have now been maintained at a number of the stations in the Red River Valley through a long enough period so that definite statements are permissible concerning the normal or average run-off for a term of years. In particular, the station on the Red River at Grand Forks should be mentioned because its record runs through thirty-six consecutive years; there are very few rivers in the United States for which as long records as this are available.

The average annual rainfall for the Red River Valley is about 25 inches at the eastern margin and 17 inches at the western, or 21 inches for the area as a whole; but in extremely wet or dry years the surplus or

TOTAL ANNUAL RUN-OFF IN INCHES FROM THE DRAINAGE AREA

Year	Red River Grand Forks North Daokta	Red River Fargo North Daokta	Ottertail River Fergus Falls Minnesota	Wild Rice River Twin Valley Minnesota	Red Lake River Crookston Minnesota	Clearwater River Red Lake Falls Minnesota	Thief River Thief River Falls Minnesota	Sheyenne River Fargo North Daokta	Pembina River Neche North Daokta	Mouse River Minot North Daokta
1882	3.1	.....	.....	.....	.....	.....	.....	.....	.....	.....
1883	2.4	.....	.....	.....	.....	.....	.....	.....	.....	.....
1884	1.6	.....	.....	.....	.....	.....	.....	.....	.....	.....
1885	1.7	.....	.....	.....	.....	.....	.....	.....	.....	.....
1886	1.1	.....	.....	.....	.....	.....	.....	.....	.....	.....
1887	0.6	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	1.5	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889	0.5	.....	.....	.....	.....	.....	.....	.....	.....	.....
1890	0.4	.....	.....	.....	.....	.....	.....	.....	.....	.....
1891	0.7	.....	.....	.....	.....	.....	.....	.....	.....	.....
1892	2.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
1893	1.9	.....	.....	.....	.....	.....	.....	.....	.....	.....
1894	1.2	.....	.....	.....	.....	.....	.....	.....	.....	.....
1895	0.5	.....	.....	.....	.....	.....	.....	.....	.....	.....
1896	1.9	.....	.....	.....	.....	.....	.....	.....	.....	.....
1897	3.1	.....	.....	.....	.....	.....	.....	.....	.....	.....
1898	0.9	.....	.....	.....	.....	.....	.....	.....	.....	.....
1899	1.2	.....	.....	.....	.....	.....	.....	.....	.....	.....
1900	1.0	.....	2.1	.....	.....	.....	.....	.....	.....	.....
1901	1.8	.....	2.6	.....	.....	.....	.....	.....	.....	.....
1902	1.8	1.0	3.2	.....	4.7	.....	.....	0.6	.....	.....
1903	1.6	1.0	2.9	.....	3.8*	.....	.....	0.4	.....	0.33
1904	2.7	1.9	3.9	.....	5.4	.....	.....	0.8	3.1	1.54
1905	2.1	1.8	5.3	.....	5.2	.....	.....	0.4	1.0	0.09
1906	2.5	2.6	6.7	.....	5.4	.....	.....	0.4	0.7	0.19
1907	1.9	2.4	4.9	.....	3.5	.....	.....	.....	1.1	0.43
1908	1.7	1.6	3.9	.....	4.0	.....	.....	.....	0.6	0.14
1909	1.4	1.5	3.9	6.5*	3.4	3.9*	3.4*	.....	.....	0.22
1910	1.3	1.2	2.1	2.5	3.0	2.6	2.7	.....	0.3	0.07
1911	0.4	0.4	1.4	1.5	0.7	0.9	0.1	.....	0.4	0.13
1912	0.5	0.7	1.9	1.7	0.7	1.6	0.1	.....	0.5	0.23
1913	0.8	0.8	2.6	1.9	1.4	2.8	1.0	.....	1.1	0.17
1914	1.0	1.4	3.6	2.8	1.8	3.8	1.0	.....	0.3	0.19
1915	1.6	1.9	4.4	4.1	2.6	3.7	2.2	.....	0.1	0.01
1916	3.2	4.3	5.0	5.8	5.2	4.8	4.8	.....	.....	0.56
1917	1.2	1.6	.....	1.8	1.9	1.4	1.2	.....	.....	0.29
Mean	1.5	1.6	3.6	3.2	3.3	2.8	1.8	0.5	0.8	0.31

*Estimated for part of year.

deficiency in certain sections of the area has sometimes been nearly or quite ten inches. Of this 21 inches, only a very small fraction ever

reaches the river, from five to six inches to less than one inch on the different tributaries in different years, and the thirty-six year average for the Red River at Grand Forks is only one and one-half inches.

The table following shows the total number of inches of water from its drainage area that has reached each river station during each year of record, and illustrates clearly the great variation from one year to another. Wet years and dry years are seen, or cycles of them; but (contrary to the superstition often popularly accepted) there is not evident any considerable systematic increase or diminution in the long period average stream flow from decade to decade.

This table and the table of average flows for the entire period of record, were computed by the writer from the records of the Geological Survey for an article on "The Floods of the Red River Valley" which treats the topic in more detail; this was published in the Quarterly Journal of the University of North Dakota, Vol. 8, page 207 (April 1918) and copies can be supplied by the writer to anyone interested.

AVERAGE FLOW FOR WHOLE TERM OF RECORD

River and location of gaging station, drainage area in square miles, length of record, average flow in second-feet, and maximum and minimum records of flow within the period.

Red River at Grand Forks, N. D., drainage area 25,000 square miles; records Marck 30, 1882 to January 1, 1918. Average flow 2,800; maximum recorded, 43,000, April 10, 1897; minimum, 100, Feb. 10, 1912.

Red River at Fargo, N. D., drainage area 6,020 square miles; records May 27, 1901 to Jan. 1, 1918. Average flow 720; maximum recorded, 7,720 July 11, 1916; minimum, 36, Nov. 1, 1910.

Ottertail River near Fergus Falls, Minn., drainage area 1,310 square miles; records May 1, 1899 to Oct. 1, 1916. Average flow, 330; maximum recorded, 1,020, July 2, 1906; minimum, 16, Sept. 30, 1910.

Wild Rice River at Twin Valley, Minn., drainage area 805 square miles; records June 30, 1909 to Oct. 1, 1917. Average flow, 190; maximum recorded, 9,200, July 20, 1909; minimum, 10, Feb. 5, 1912.

Red Lake River at Crookston, Minn., drainage area 5,320 square miles; records May 19, 1901 to Jan. 1, 1918. Average flow, 1,300; maximum recorded, 14,400, April 17, 1916; minimum, 10, Jan. 27, 1912.

Clearwater River at Red Lake Falls, Minn., drainage area 1,310 square miles; records, June 18, 1909 to Oct. 1, 1917. Average flow, 270; maximum recorded, 3,990, April 15, 1916; minimum, 20, July 4, 1911.

Thief River near Thief River Falls, Minn., drainage area 1,010 square miles; records, July 1, 1909 to Oct. 1, 1917. Average flow, 140; maximum recorded, 4,080, April 23, 1916; minimum, 0, Dec. to Feb. 1910-11.

Sheyenne River near Fargo, N. D., drainage area, 5,400 square miles; records, March 22, 1902 to July 1, 1907. Average flow, 220; maximum recorded, 1,950, April 27, 1904; minimum, 19, Aug. 17, 1903.

Pembina river at Neche, N. D., drainage area, 2,940 square miles; records April 29, 1903 to Oct. 1, 1915. Average flow, 180; maximum recorded, 3,870, May 2, 1904; minimum, 1, Sept. 15, 1911.

Mouse River at Minot, N. D., drainage area, 8,400 square miles; records May 5, 1903 to Jan. 1, 1918. Average flow, 190; maximum recorded, 12,000, April 20, 1904; minimum, 0.1, Feb. 28, 1913.

NORTH DAKOTA LIGNITE COAL MINES

BIENNIAL PERIOD 1916-1917

NAMES OF MINES PRODUCING.

1000 Tons Per Year or More.

No.	Name of Mine	Years
	ADAMS COUNTY	
1.	Clermont Coal Mine	1916-1917
2.	Haynes Coal Mine	1916-1917
3.	Hettinger Electric Light and Power Co., Coal Mine	1916-1917
4.	Leff Coal Mine	1916
5.	Pearl Butte Coal Mine	1917
6.	Pinkham Coal Mine	1917
9.	Stephenson and Gunderson Coal Mine	1916
	BILLINGS COUNTY	
12.	High Grade Coal Mines	1916-1917
13.	Red Trail Coal Mine	1917
	BOWMAN COUNTY	
14.	Bowman Coal Mine	1916-1917
15.	Johnson Fuel Co., Coal Mine	1916-1917
	BURKE COUNTY	
18.	Fenster Coal Mine	1916-1917
20.	Kielbock Coal Mine	1916-1917
21.	Makee Coal Mine	1916
	BURLEIGH COUNTY	
22.	Meade and Sims Coal Mine	1917
23.	Souther Coal Mine	1916-1917
24.	Sunlight Coal Mine	1916-1917
	BURLEIGH COUNTY	
26.	Asplund Coal Mine	1916-1917
30.	Lind Coal Mine	1916-1917
31.	Peterson Coal Mine	1916-1917
32.	Wilton Coal Mine	1916-1917
	DIVIDE COUNTY	
33.	Dougherty Coal Mine	1916-1917
34.	Hought Coal Mine	1916-1917
35.	Lorbeski Coal Mine	1916-1917
37.	Truax Coal Mine	1916-1917
	DUNN COUNTY	
43.	Hy Grade Coal Mine	1917
44.	Paulson Coal Mine	1916-1917
46.	Sloan Coal Mine	1917
	GOLDEN VALLEY COUNTY	
50.	Grimm Coal Mine	1917
	GRANT COUNTY	
53.	Black Diamond Coal Mine	1916-1917
54.	Coffin Butte Coal Mine	1916-1917

No.	Name of Mine	Years
	HETTINGER COUNTY	
60.	Albrecht Coal Mine	1917
61.	Arnold Coal Mine	1916-1917
63.	Culver Coal Mine	1916
65.	Havelock Coal Mine	1917
66.	Kallis Coal Mine	1916
68.	Merry Coal Mine	1916-1917
70.	Rumph Coal Mine	1917
71.	Sadler Coal Mine	1917
72.	Square Deal Coal Mine	1916-1917
	McLEAN COUNTY	
75.	Bitumina Coal Mine	1916-1917
77.	Elm Point Coal Mine	1917
78.	Fjelddal Coal Mine	1916-1917
79.	Fredrich Coal Mine	1917
80.	Garrison Coal Mine	1916-1917
81.	Hansen Coal Mine	1916-1917
82.	Johnson Coal Mine	1917
85.	Rupp Coal Mine	1917
86.	Seibel Coal Mine	1917
	MERCER COUNTY	
88.	Beulah Coal Mine	1917
89.	Dilger Coal Mine	1917
95.	Kesler Coal Mine	1917
97.	Krem Coal Mine	1917
98.	Lucky Strike Coal Mine	1917
101.	Reichengberg Coal Mine	1916-1917
103.	Standard Coal Mine	1916
104.	Schmidt Coal Mine	1916
	MORTON COUNTY	
105.	Coopenhaver Coa lMine	1916
107.	Garfield Coal Mine	1916
108.	Harnish Coal Mine	1917
110.	Hebron Coal Mine	1916-1917
111.	Knutson Coal Mine	1917
113.	Kramer Coal Mine	1917
116.	New Salem Coal Mine	1916-1917
117.	North Star Coal Mine	1916-1917
119.	Pleasant Ridge Coal Mine	1916-1917
120.	Ramsland Coal Mine	1916
	MOUNTRAIL COUNTY	
124.	Hoppe Coal Mine	1917
128.	Sellers Coal Mine	1917
	OLIVER COUNTY	
130.	Meyhoff Coal Mine	1916
131.	Pleasant Valley Coal Mine	1916-1917
132.	Spring Valley Coal Mine	1917
	STARK COUNTY	
140.	Lehigh Coal Mine	1916-1917
142.	North Star Coal Mine	1916-1917
143.	Pittsburg Coal Mine	1916-1917
144.	St. Mary's Coal Mine	1917
145.	Zenith Coal Mine	1916-1917
	WARD COUNTY	
147.	Burlington City Coal Mine	1916-1917
148.	Coflisch Coal Mine	1916-1917
149.	Clark Coal Mine	1917
150.	Colton Coal Mine	1916-1917
151.	Conan Coal Mine	1916-1917

152.	Crosby Coal Mine	1917
153.	Davis Coal Mine	1916-1917
154.	Dakota Coal Mine	1916-1917
155.	Diamond Coal Mine	1916
156.	Farmers' Coal Mine	1917
157.	Foxholm Coal Mine	1916-1917
160.	Hunnewell Coal Mine	1916-1917
161.	Johnson Coal Mine	1916-1917
164.	Leeson No. 1 Coal Mine	1916-1917
165.	Leeson No. 2 Coal Mine	1916-1917
166.	Lloyd Coal Mine	1916-1917
167.	Mellon Coal Mine	1917
170.	National Coal Mine	1916-1917
175.	Wallace Coal Mine	1916-1917
176.	Wood Coal Mine	1916-1917
	WILLIAMS COUNTY	
178.	Black Beauty Coal Mine	1917
179.	Black Diamond Coal Mine	1916-1917
182.	Bryne Coal Mine	1916-1917
184.	Ellithorpe Coal Mine	1916-1917
186.	Falk Coal Mine	1916-1917
190.	Head Coal Mine	1916-1917
191.	Husebye Coal Mine	1916-1917
194.	Lovejoy Coal Mine	1916-1917
196.	Moorman Coal Mine	1916-1917
197.	Narveson Coal Mine	1916
199.	Reclamation Service Coal Mine	1916-1917

Total number for 1916 73
Total number for 1917 94

NORTH DAKOTA LIGNITE COAL MINE REPORT
1916-1917

The sixth biennial inspection of coal mines was made during the winter of 1917-1918 by Mr. Harris Robinson, assistant state engineer. Part of the data presented in this report was compiled by Mr. Robinson prior to his enlisting in the U. S. Army in June of 1918.

The production of lignite during the year 1917 shows a considerable increase over that of the previous year. The following comparative table giving the production for the past ten years will be of interest:

Calendar Years	No. of Mines	Production	Annual Increase	Annual Percentage Of Increase
1908*	65	320,742	.....	.....
1909	103	372,570	51,828	16.15
1910*	84	416,580	44,010	11.81
1911	100	486,842	70,262	16.86
1912*	82	501,827	14,985	3.09
1913	109	514,632	12,805	2.41
1914*	128	569,869	55,237	10.72
1915	137	586,116	16,247	2.86
1916*	140	680,101	93,985	16.03
1917	196	885,473	205,372	30.20

*Data collected by blanks sent to mine owners and operators.

Inspection of coal mines has in the past been made once every two years, as provided by law. However, the state engineer believes that such inspection should be made annually and it is expected that arrangements

which will permit of this will be completed in time to provide such annual inspection beginning with the present year, 1918.

It has seemed advisable thus far to list all mines producing coal, irrespective of the amount of their output. In the first place, in a comparatively new state the mere fact that coal is available at certain places may constitute valuable information. In the second place, the small mines may between seasons develop into fair sized producers and it is considered necessary to keep a record of them. And in the third place, the small mines need inspection more than the larger ones, as the data on file in the office shows that more fatalities occur in two or three men mines than in larger ones. However, it is believed that much detail information can be eliminated, and subsequent reports will contain detail information concerning only those mines with an annual output in excess of 1000 tons.

LABOR

During 1916 and 1917 wages for miners generaly increased from 10 to 25%. In most instances this increase was accomplished without any particular disturbances, although at several mines short strikes were staged. At practicaly all of the mines labor shortage during 1917 was a source of complaint.

1916

Reports covering 140 mines were obtained for the year 1916. Thirty-one of these mines were strip pits and 109 were underground mines. The average number of men employed by the mining industry for the year was 791, the average for the six winter months being 1,106 and for the summer months 476. Of the 1,106 men employed during the winter months 756 were classified as miners and 350 as employees other than miners. The 476 men employed during the summer months consisted of 279 miners and 197 others.

The average daily tonnage based on total men days amount to 3.35 per man employed. Seventy-three of the mines listed had an annual output of 1000 tons or more.

There occurred one fatal accident during the year, and 38 non-fatal accidents. In terms of men employed this amounts to 1.26 fatalities per 1000, or in terms of tonnage 0.15 fatalities per 100,000 tons production. The non-fatal accidents in the same terms respectively are 48.04 per 1000 men or 5.58 per 100,000 tons production.

The production of coal totaled 680,101 short tons, of which 427,688 tons were shipped. The average selling price for the year at the mines was $1.71.

1917

During 1917, 196 mines were in operation, 171 of which were inspected during the winter of 1917-1918, and information concerning 25, mostly strip pits, was secured by detailed reports. Of these mines 52 were strip pits and 144 underground mines. The average number of men employed amounted to 1,187, 1,522 during the six winter months and 822 during the summer months. An average of 1,003 miners were at work during the winter, and 549 employees other than miners. During the summer months

425 miners were employed, together with 397 others. The average daily output per man employed was 3.22 tons, based on total tonnage and total man days. Ninety-four of the mines had an annual production of 1000 tons or more.

There were five fatal and 46 non-fatal accidents during the year. In terms of men enployed this amounts to 4.21 fatalities per 1000, or in terms of tonnage, 0.56 fatalities per 100,000 tons production. The non-fatal accidents amount to 38.75 per 1000 men, or 5.19 per 100,000 tons production.

The production of coal for the year amounted to 885,473 tons, of which 607,240 tons were shipped. The average selling price at the mines was $1.93 per ton.

Table showing tonnage sold locally and shipped:

YEAR	Tons Sold Locally	Tons Shipped
1913	162,531	352,101
1914	185,332	384,537
1915	219,785	336,331
1916	252,413	427,688
1917	278,233	607,240

ACCIDENTS

Accurate information relative to accidents is difficult to secure, many mine operators failing to keep any reliable record whatever. The value of the excellent records kept by other operators is to some extent nullified for purposes of arriving at averages by this fact. However, the department feels that the information included in this report is in all instances fairly accurate and, in the case of some of the mines listed, is absolutely accurate in every detail. The records of the Wilton mine are exceptionally well kept.

Accidents are classified as fatal and non-fatal. No attempt has been made to subclassify the non-fatal accidents, serious and minor accidents being listed under the one head.

Table showing accidents per 1000 men and per 100,000 tons production:

Year	Average No. men employed	No. of fatal accidents	Fatal accidents per 1000 men	No. of non-fatal accidents	Non-fatal accidents per 1000 men	No. of fatal accidents per 100,000 tons coal	No. of non-fatal accidents per 100,000 tons coal
1912	598	0	0.0	15	25.08	0.0	2.99
1913	605	7	11.57	35	57.85	1.62	8.12
1914	762	2	2.62	26	24.12	0.35	4.57
1915	730	1	1.17	14	19.17	0.17	2.39
1916	791	1	1.26	38	48.04	0.15	5.58
1917	1187	5	4.21	46	38.75	0.56	5.19

FATALITIES
1916

The only fatality reported for 1916 occurred at the Lehigh Coal Mine where Martin Bjorkman of Boyceville, Wisconsin, occupied as a driver, was killed December 12, 1916. Bjorkman pulled out a load apparently out of turn and met another driver. He jumped on to the wrong side of a loaded car and was crushed.

FATALITIES
1917

William Schwan was killed March 3, 1917 by a fall of coal. The accident occurred while he was pulling roof and was due to a lack of proper timbering back of the work.

John George, killed in the Wilton Coal Mine August 17, 1917, met his death when he attempted to jump on the cage after it started up and got caught between the cage and the shaft timbers.

Joe Wiercinski was killed in the Wilton Mine by a fall of coal. The accident occurred on December 11, 1917.

Carl Reider was killed at the Davis Mine in October, 1917. He had placed two shots and went back to the face thinking both shots had fired. One, however, was delayed and on his return he was caught by the blast of this one.

Jake Setzler was killed at the Husebye Mine October 8, 1917. Setzler was operating the hoist and unloading cars. He had lowered the cage, and failing to remember this, he shoved an empty car over into the shaft and fell with it.

Tabulated information of fatal and non-fatal accidents are shown at the conclusion of the tabulated coal mine information and just before the individual descriptions of mines.

EXPLANATORY

Information concerning coal mines for the biennial period closing December 31, 1917, is presented in tabulated form with short descriptions of each mine. The mines are listed according to counties, both the counties and the names of the mines being arranged in alphabetical order. Each mine is given a number, which is used throughout the tables and the individual descriptions, and will be found convenient for ready reference.

The directory gives the name of the owner, the lessee, the postoffice address and the location of the mine.

Table No. 1 gives the name of the superintendent, the kind of opening, method of ventilation, method of lighting, the years operated and the date of inspection.

Table No. 2 shows the depth of the coal, the thickness of the coal bed and the thickness of the coal mined, system of mining, method of mining and means of delivering the coal at the surface.

Table No. 3 shows the number of days operated during the past two years, the average number of days worked each month and the average number of miners employed, the average daily production, average num-

ber of men other than miners and the average price paid the miners, together with average day wages.

Table No. 4 shows the dimensions of the mine entries and rooms.

Table No. 5 shows the kind of roof and floor found in the mines, how they are drained, the kind of timber used in them and its approximate cost.

Table No. 6 gives information concerning the track and the mine cars, the explosives used and method of ignition; also the distance of the mine from the shipping station and the name of the railroad.

Table No. 7 gives information concerning the production, the selling price at the mine and the total value for both 1916 and 1917.

Following the tables will be found, in tabulated form, the information listed below:

Production by counties.

A list of mines that shipped coal.

Fatal accidents in 1916 and 1917.

Non-fatal accidents in 1916 and 1917.

Following the tabulated information will be found individual descriptions of the mines.

Page 55 is a blank page in the original report.

DIRECTORY OF NORTH DAKOTA COAL MINES

ADAMS COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Location Sec.	Twp.	Rge.
1.	Clermont Coal Mine	Clermont Coal Co.		Haynes	W½ NW¼	8	129	94
2.	Haynes Coal Mine	Haynes Co-op. Coal & Mining Co.		Haynes	NE¼ SE¼ & NW¼ SW¼	8 & 9	129	94
3.	Hettinger Electric Light and Power Co. Coal Mine	Hettinger Electric Light & Power Co.		Hettinger	SW¼	23	130	95
4.	Leff Coal Mine	Albert Leff		Reeder	SE¼ NE¼ & NE¼ SE¼	10	130	98
5.	Pearl Butte Coal Mine	Paul W. Boehm	Clarence Holdridge	Hettinger	SE¼	3	130	94
6.	Minnehaha Coal Mine	Andrew Jepson		Reeder	SE¼ NE¼	6	130	98
7.	Pinkham Coal Mine	Wm. Pinkham		Haynes	SE¼ SE¼	26	130	94
8.	Reeder Coal Mine	National Briqueting Co.	Reeder Coal Co.	Reeder	NW¼	10	130	98
9.	Stephenson and Gunderson Coal Mine	Stephenson and Gunderson		Haynes	N½ NW¼	15	129	94
10.	Williamson Coal Mine	J. S. Williamson		Haynes	SE¼	11	129	94

BILLINGS COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
11.	De Mores Coal Mine	N. P. Refrigerator Car Co.	H. G. Kinmark	Medora	NW¼	26	140	102
12.	High Grade Coal Mine	High Grade Lignite Coal Co.		Medora	SW¼	26	140	102
13.	Red Trail Coal Mine	Brodie Coal Mining Co.		Medora		22	140	102

BOWMAN COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
14.	Bowman Coal Mine	Jas. Touhey	J. C. Palmer	Bowman	SW¼	14	132	102
15.	Johnson Fuel Co. Coal Mine	Johnson Fuel Co.		Scranton	SW¼	24	131	100

BURKE COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
16.	Bonsness Coal Mine	O. E. Bonsness		Stampede	SE¼	21	162	93
17.	Domrese Coal Mine	Carl Larson		Columbus		32	164	93
18.	Fenster Coal Mine	H. J. Domrese	Wagner & Hoffner.	Larson	NE¼ NE¼	7	162	94
19.	Hagen Coal Mine	Even & John Hagen.		Noonan		7	162	94
20.	Kielhock Coal Mine	Kielhock & Wixom		Columbus		20	162	93
21.	Makee Coal Mine	Shannon G. Ruffcorn Estate	Chas. Tauber	Columbus		32	164	93
22.	Meade & Sims Coal Mine	Wm. Metzger	J. Meade & M. Sims.	Stampede	NW¼	29	162	93
23.	Souther Coal Mine	L. Souther		Larson	N½ S½	17	162	94
24.	Sunlight Coal Mine	J. S. Greenup		Columbus	SE¼	20	162	93
25.	Zimdars & Hall Coal Mine	Ole Beckkedahl	H. Zimdars & J. Hall	Lignite		35	162	92

BURLEIGH COUNTY

26.	Asplund Coal Mine	Wm. Asplund	T. J. Asplund	Wilton SW¼	4	142	79
27.	Backman Coal Mine	Emil Backman		Wilton SW¼	8	142	79
28.	Berger Coal Mine	C. H. Berger		Baldwin W½ E½	33	142	79
29.	Laubach Coal Mine	R. A. Laubach	M. L. Ferrick	Baldwin S½	27	142	80
30.	Lind Coal Mine	Mrs. Anna Lind	J. A. Johnson	Wilton	6	142	79
31.	Peterson Coal Mine	C. J. Peterson	Tom Scott	Wilton NE¼	9	142	79
32.	Wilton Coal Mine	Washburn Lignite Coal Co.		Wilton	5	142	79

DIVIDE COUNTY

33.	Dougherty Coal Mine	Mr. Dougherty	Chas. Alton	Noonan NE¼ NW¼	10	162	95
34.	Hought Coal Mine	J. E. Hought		Noonan S½ SE¼	3	162	95
35.	Lorbeski Coal Mine	John Lorbeski	John Lorbeski	Noonan N½ SE¼	3	162	95
36.	Mathieson Coal Mine	Ludvig Mathieson		Alkabo SE¼	14	161	102
37.	Truax Coal Mine	E. M. Truax		Noonan E½ NE¼	10	162	95

DUNN COUNTY

38.	Armbernst Coal Mine	Anton Armbernst		Manning NW¼ NW¼	18	143	96
39.	Bang Coal Mine	John Bang		Dunn Center SW¼ SW¼	26	145	94
40.	Blecha Coal Mine	Tom Blecha		Manning SW¼	12	143	96
41.	Chase Coal Mine	W. A. Gonye		Dunn Center	32	144	94
42.	Heiser Coal Mine	Everett Real Estate Co.	S. M. Black	Manning	17	143	95
43.	Hy Grade Coal Mine	A. H. Pelton		Dunn Center NW¼	29	145	93
44.	Paulson Coal Mine	Paul Paulson	Torger Helgeson	Werner SE¼	28	145	93
45.	Pulver and Logan Coal Mine	Pulver & Logan		Werner NW¼	29	145	92
46.	Sloan Coal Mine	Henry Sloan	Norton & Fritz	Dodge	9	144	91
47.	Three Star Coal Mine	Sam Curley		Dunn Center	1	144	95

GOLDEN VALLEY COUNTY

48.	Corliss Coal Mine	L. J. Corliss		Sentinel Butte NW¼ SE¼	25	139	105
49.	Cusick Coal Mine	J. Cusick		Sentinel Butte	8	139	104
50.	Grimm Coal Mine	J. P. Grimm		Sentinel Butte	8	139	104
51.	Porter Coal Mine	U. S. Government	W. H. Porter	Sentinel Butte SW¼	22	139	105
52.	Sentinel Butte Coal Mine	Hunter Land Co.	R. L. Barnett	Sentinel Butte	5	139	104

GRANT COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Location Sec.	Twp.	Rge.
53.	Black Diamond Coal Mine	Mamie M. Dunn	S. S. Houser	Leith	NE¼ SE¼	12	133	88
54.	Coffin Butte Coal Mine.	N. P. Ry. Co.	R. C. Babcock	Pretty Rock	SE¼	35	132	90
55.	Lehner Coal Mine	J. Lehner		Leith	SW¼	10	133	88
56.	Miller Coal Mine	Lawrence Miller		Bentley		3 mi.SE of New Leipzig		
57.	Patzer Coal Mine	Adam Patzer		New Leipzig		10	133	90
58.	Rock Coal Mine	Ray E. Rock		Leith	SW¼	2	133	88
59.	Wolford Coal Mine	Wm. W. Wolford		Elgin		4 mi. NE of Elgin		

HETTINGER COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
60.	Albrecht Coal Mine	C. A. Albrecht		Havelock		33	136	96
61.	Arnold Coal Mine	Chas. T. Arnold	John Wienandy	Regent	N½	5	134	95
62.	Billman Coal Mine	Winger & Hagan	A. D. Billman	Regent		9	134	94
63.	Culver Coal Mine	Chas. C. Culver	V. Arnold	New England	SW¼	14	139	97
64.	Davis Coal Mine	Chas. E. Davis	W. H. Murphy	Regent	NE¼	23	134	95
65.	Havelock Coal Mine	Mrs. E. W. Adams	John Adams	Havelock	NE¼	27	135	96
66.	Kallis Coal Mine	Kallis Bros.		Odessa	SE¼ SE¼	24	134	91
67.	Kunze Coal Mine	H. O. Kunze	Geo. Wilhelm	Regent	SE¼	6	134	95
68.	Merry Coal Mine	C. H. Merry		Mott	SE¼ NE¼	34	132	93
69.	Nelson Coal Mine	W. H. Brown & Co.	Mons Nelson	Regent	SW¼	35	134	95
70.	Rumph Coal Mine	C. W. Rumph		Mott	NW¼	30	133	92
71.	Sadler Coal Mine	Sadler Coal Mining Co		Coalbank	SW¼	5	134	95
72.	Square Deal Coal Mine	Mrs. G. E. Crary	W. A. Crary	Bentley	SE¼	35	133	91
73.	Switzer Coal Mine	Presley Switzer		Regent	SW¼	10	134	95
74.	Utter Coal Mine	Joseph E. Utter		Odessa	E½	25	134	91

McLEAN COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
75.	Bitumina Coal Mine	John Satterlund	Edward Kugler	Washburn	NW¼	6	144	82
76.	Borchardt Coal Mine	E. G. Borchardt		Underwood	SE¼ NE¼	5	145	82
77.	Elm Point Coal Mine	Elm Point Mining Co.		Harvey	N½	35	145	84
78.	Fjelddal Coal Mine	T. Fjelddal	Fred Wagner	Underwood	W½ W½	18	146	81
79.	Fredrich Coal Mine	Wm. Fredrich	Henry Fredrich	Underwood	SW¼	1	146	82
80.	Garrison Coal Mine	Garrison Coal, Light and Power Co.		Garrison	E½	18	148	84
81.	Hanson Coal Mine	Peter Hansen	Aug. Markes	Underwood	E½ W½	18	146	81
82.	Johnson Coal Mine	Swan A. Johnson		Coleharbor	SE¼	18	148	83
83.	Koenig Coal Mine	Johannes Koenig	Adolph Schedler	Underwood		3 mi. SE of Underwood		

McLEAN COUNTY—Continued

84.	Pfister Coal Mine	Fred Pfister		Washburn ....NW¼	11	144	83
85.	Rupp Coal Mine	U. S. Government	E. R. Rupp	Garrison ....E½ NE¼	25	148	85
86.	Seibel Coal Mine	Frank Seibel		Garrison ....NW¼	30	148	84
87.	Ulrich Coal Mine	U. S. Government	Kingsley, Ulrich and Lauser	Garrison ....W½ NW¼	18	148	83

MERCER COUNTY

88.	Beulah Coal Mine	Beulah Coal & Mining Co.		Beulah ....NE¼	25	144	88
89.	Dilger Coal Mine	John R. Stewart	Lawrence Dilger	Beulah ....SE¼	11	143	88
90.	Gallagher Coal Mine	Jack Gallagher		Hazen	12	144	87
91.	Golden Valley Coal Mine	G. S. Davis		Golden Valley ....SE¼	9	144	90
92.	Haven Coal Mine	Lee Haven		Golden Valley ....SE¼	4	144	90
93.	Ingold Coal Mine	W. P. Ingold	Tom Figenskan	Golden Valley ....NW¼	35	144	90
94.	Keeley Coal Mine	Ed. Oster	Ulmer Bros.	Hazen ....NE¼	7	144	86
95.	Kesler Coal Mine	Geo. Kesler	Geo. A. Schmidt	Beulah ....NE¼	12	145	87
96.	Koulberg Coal Mine	Albert Koulberg		Hazen	3 mi. S of Hazen		
97.	Krem Coal Mine	Richter and Erbele		Krem ....NE¼	20	145	86
98.	Lucky Strike Coal Mine	Slowery, Field and Strope	Wm. Thurston	Zap ....SW¼	23	144	89
99.	Myers Coal Mine	Harold Myers	Wm. Riffle and T. Morris	Golden Valley ....SW¼	9	144	90
100.	Otness Coal Mine	Enoch Otness		Hazen	20	144	86
101.	Reichengberg Coal Mine	Jake Reichengberg	John Bartell	Hazen ....NW¼	8	144	86
102.	Reigel Coal Mine	J. H. Reigel		Golden Valley ....SW¼	3	144	90
103.	Standard Coal Mine	Geo. G. Schmidt		Beulah ....N½ NW¼	25	144	88
104.	Schmidt Coal Mine	Geo. G. Schmidt		Beulah ....S½	19	145	87

MORTON COUNTY

105.	Coopenhaver Coal Mine	A. N. Coopenhaver		Flasher ....N½ NE¼	15	134	84
106.	Elmer Coal Mine	Joseph Elmer		Hebron ....SE¼	24	140	90
107.	Garfield Coal Mine	Halle Kensmann		Youngtown ....SE¼	19	139	85
108.	Harnisch Coal Mine	Harnisch Bros.		Hebron ....SE¼ NW¼	8	140	90
109.	Haymarsh Coal Mine	Wm. Gietzer	Simon Reinbold	Haymarsh	28	141	89
110.	Hebron Coal Mine	Hebron Fire and Pressed Brick Co.	F. Bennek	Hebron ....W½ SW¼	2	140	90
111.	Knutson Coal Mine	C. G. Thor		Almont ....SE¼	31	138	86
112.	Kokakaler Coal Mine	Henry Kokakaler		Glen Ullen ....NE¼	31	139	89

MORTON COUNTY—Continued

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Location Sec.	Twp.	Rge.
113.	Kramer Coal Mine	Fred Kramer		New Salem	SW¼	7	139	85
114.	Lange Coal Mine	Anton Lange	F. C. Lange	Glen Ullen	NW¼	23	138	88
115.	Lidstrom Coal Mine	Mrs. Anna Lindstrom	F. E. Brown	Glen Ullen	NE¼	22	138	88
116.	New Salem Coal Mine	R. W. Webb & Co.	A. J. Gray	New Salem	S.E¼ SW¼	15	139	85
117.	North Star Coal Mine	Murry & Haven	John Chencz	Hebron	SE¼	3	130	90
118.	Ormiston Coal Mine	G. J. Ormiston		Judson	SE¼	17	137	84
119.	Pleasant Ridge Coal Mine	A. L. Tavis	Louis Kowoko	Glen Ullen		20	139	88
120.	Ramsland Coal Mine	Geo. Reichel		Almont	Lot 3	6	137	86
121.	Wadeson Coal Mine	H. D. Wadeson		Hebron	S½ NE¼	4	140	90

MOUNTRAIL COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
122.	Blake Coal Mine	F. E. Blake		Stanley	E½ SW¼	13	155	92
123.	Everson Coal Mine	J. J. Everson		White Earth	SW¼	23	156	94
124.	Hoppe Coal Mine	Herman Moerke		Epworth	E½ SE¼	21	153	90
125.	Kale Coal Mine	F. L. Alger	B. F. Kale	Stanley	SW¼ NE¼	13	155	92
126.	Porger Coal Mine	Geo. Porger		White Earth		15	156	94
127.	Rodgers Coal Mine	G. S. Rodgers		Palermo		5	154	89
128.	Sellers Coal Mine	W. L. Sellers		Van Hook	NE¼	28	153	90

OLIVER COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
129.	Barlow Coal Mine	D. T. Barlow		Fort Clark	SE¼ SW¼	4	143	84
130.	Meyhoff Coal Mine	Dick Meyhoff		Hannover	SW¼ SW¼	2	141	84
131.	Pleasant Valley Coal Mine	V. R. Boerner		Center		8	142	84
132.	Spring Valley Coal Mine	N. O. Nelson		Center		12	141	84
133.	Tripp Coal Mine	N. O. Nelson		Center		29	142	83

RENVILLE COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
134.	Tehelka Coal Mine	P. P. Tehelka		Carpio	NE¼	33	158	86
135.	White Ash Coal Mine	Dorr Caroll	Roy Hopkins	Carpio	SW¼	26	158	86
136.	Wooster Coal Mine	S. J. Rasmussen	L. C. Herzberg	Carpio		34	158	86

SLOPE COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
137.	*Krenz Coal Mine	William Krenz	R. Koschnick	De Sart	NE¼ NE¼	25	133	98

STARK COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
138.	Cross Coal Mine	Carl Podolanchuk		Belfield	E½	34	140	99
139.	Hokos & Benek Coal Mine	Hokos & Benek Coal Mining Co.		Dickinson		7	139	95

STARK COUNTY—Continued

140.	Lehigh Coal Mine	Consolidated Coal Co.		Dickinson S½	8	139	95
141.	North Creek Coal Mine.	Deane Wiley		South Heart SW¼	26	140	98
142.	North Star Coal Mine	John Ostoj		Richardton Lot 1	5	140	92
143.	Pittsburg Coal Mine	Dakota Lignite Mines Co.		Dickinson NW¼	8	139	95
144.	St. Mary's Coal Mine	St. Mary's Monastery		Richardton SW¼	32	140	92
145.	Zenith Coal Mine	Dakota Lignite Mines Co.		Dickinson	6	139	98

WARD COUNTY

146.	Bartoshivich Coal Mine.	Mary Bartoshivich	Joe Bartoshivich	Sawyer SE¼	24	151	82
147.	Burlington City Coal Mine	Foote & Brunner	J. W. Perlechek	Burlington	11	155	84
148.	Coflisch Coal Mine	H. E. Christienson	J. C. Willoughby	Sawyer SE¼ SE¼	29	152	81
149.	Clark Coal Mine	Kenmare Nat'l Bank.	G. V. Clark	Kenmare	33	160	88
150.	Colton Coal Mine	L. D. Colton		Burlington SE¼ SE¼	1	155	84
151.	Conan Coal Mine	D. A. Conan, Sr.	J. F. Casteel	Burlington NE¼	1	155	84
152.	Crosby Coal Mine	H. N. Peck	Martin Erickson	Kenmare NW¼ SE¼	30	161	88
153.	Davis Coal Mine	Northern Briqueting Co.	McMillan Investment Co.	Burlington	12	155	84
154.	Dakota Coal Co. Coal Mine	McClure Coal Co.	Dakota Coal Co.	Tasker 19, 3 & 24	156	84 & 85	
155.	Diamond Coal Mine	H. N. Peck	C. P. O'Neil	Kenmare Lot 1	29	160	88
156.	Farmers' Coal Mine	Stockholders Corp.		Bowbells SE¼	20	161	88
157.	Foxholm Coal Mine	Foxholm Coal Co.		Foxholm W½ SW¼ & SW¼ NW¼	2	156	85
158.	Hot Blast Coal Mine	Mr. Miller		Donnybrook	3 miles—Donnybrook		
159.	Houston Coal Mine	Dave Houston		Burlington	3	155	84
160.	Hunnewell Coal Mine	R. J. Hunnewell		Burlington NE¼	1	155	84
161.	Johnson Coal Mine	Jonas Johnson		Kenmare S½ SW¼	29	161	88
162.	Klondike Coal Mine	Wm. Spencer	L. C. Spencer	Donnybrook	31	158	87
163.	Larson Coal Mine	Gust Larson		Burlington SE¼	3	155	84
164.	Leeson No. 1 Coal Mine	J. J. Leeson		Velva SW¼	27	152	81
165.	Leeson No. 2 Coal Mine	J. J. Leeson	Christ Martinson	Velva NE¼	19	152	81
166.	Lloyd Coal Mine	Lloyd Coal Co.		Minot SE¼ SE¼	32	156	84
167.	Mellon Coal Mine	J. A. Wright	Peter Mellon	Kenmare....Lot 2 & E½ NW¼	28	160	88
168.	Rich Coal Mine	Ralph W. Rich	John A. Rohe	Kenmare SW¼ NE¼, SE¼ NW¼ and Lot 3	30	161	88
169.	Seed Coal Mine	Dr. F. D. Seed	Jake Clementish	Burlington	34	156	84
170.	National Coal Mine	National Briqueting Co.		Kenmare 6, 7 & 18	160	88	
171.	Square Deal Coal Mine.	Stephen Hodgson		Baden SE¼ SW¼	25	159	88
172.	Superior Coal Mine	Superior Coal Co.		Burlington	6	155	84

WARD COUNTY—Continued

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Location Sec.	Twp.	Rge.
173.	Tree-Bausch Coal Mine	Rufus Tree	Jas. Sells	Velva	NE¼	30	152	81
174.	Vadnais Coal Mine	O. O. Adams	James Harper	Kenmare	Lot 5	29	160	88
175.	Wallace Coal Mine	Mrs. B. Wallace		Burlington		2	155	84
176.	Wood Coal Mine	F. F. Finnegan	M. G. Wood	Velva	SE¼ SE¼	21	152	81

WILLIAMS COUNTY

No.	Name of Mine	Owner	Lessee	Address	Subdivision	Sec.	Twp.	Rge.
177.	Aanonson Coal Mine	Thor Aanonson		Zahl		10	158	101
178.	Black Beauty Coal Mine	Fred Gotham		Hanks	N½ NE¼ & N½ NW¼	17	159	101
179.	Black Diamond Coal Mine	J. W. Jackson	N. P. Ludowese	Williston	SW¼ NE¼	33	154	100
180.	Big Four Coal Mine	Ben Fedge		Bonetrail	NE¼ NW¼	14	156	101
181.	Bryant Coal Mine	F. A. Bryant		Williston		3¼ mi. E of Williston		
182.	Bryne Coal Mine	Ole Bryne	Aleck Thompson	Williston	SW¼ SE¼	33	154	100
183.	East Ellithorpe Coal Mine	Hanna Pierson	C. Ellithorpe	Williston		20	154	100
184.	Ellithorpe Coal Mine	C. Ellithorpe		Williston	SW¼ NE¼ & W½ SE¼	7	154	100
185.	Erkie Coal Mine	I. L. Erkie		Hanks	NW¼ SW¼	20	159	101
186.	Falk Coal Mine	Ole Falk		Hanks	N½ SE¼ & SE¼ SE¼	7	159	101
187.	Folvog Coal Mine	Lucy Dacoteau	H. J. Folvog	Grenora	NE¼	10	153	101
188.	Freeman Coal Mine	T. J. Freeman		Zahl	NW¼ SW¼	10	158	101
189.	Haugen Coal Mine	Edward E. Haugen		Grenora		1¼ mi. S of Hanks		
190.	Head Coal Mine	P. G. Head		Williston	NW¼	7	154	101
191.	Husebye Coal Mine	Williston Coal and Ice Co.		Williston		17	154	100
192.	Johnson Coal Mine	John Johnson		Zahl	NW¼	10	158	101
193.	Lein Coal Mine	O. P. Lein		Hanks	SE¼	11	159	102
194.	Lovejoy Coal Mine	E. F. Lovejoy		Williston		10	154	100
195.	Miller Coal Mine	A. C. Miller		Williston	NE¼ NW¼	24	156	101
196.	Moorman Coal Mine	J. M. Moorman		Wheelock	NW¼ SW¼	29	155	97
197.	Narveson Coal Mine	N. T. Narveson		Zahl	NE¼	10	158	101
198.	Nelson & Anderson Coal Mine	Jas. Nelson and Andrew Anderson		Hanks		1 mile W of Hanks		
199.	Reclamation Service Coal Mine	U. S. Government	U. S. Reclamation Service	Williston		7	154	100
200.	Seabrook Coal Mine	James Seabrook		Hanks		19	159	101
201.	Todd Coal Mine	D. I. Todd		Williston		32	154	101
202.	Vizina Coal Mine	Mrs. C. S. Vizina	C. S. Vizina	Williston		4	153	100

* Closed.

ADAMS COUNTY

No.	Name of Mine	Superintendent	Kind of Opening	Method of Ventilation	Method of Lighting	When Operated	Date of Inspection
1.	Clermont Coal Mine	Ed. Eckholm	Slope	Air shaft	Carbide	1916-1917	Jan. 27, 1918
2.	Haynes Coal Mine	Lewis Fohlenkamp	Slope	Air shaft	Carbide	1916-1917	Jan. 28, 1918
3.	Hettinger Electric Light & Power Co. Coal Mine	T. Schmickrath	Slope	Old slope	Carbide	1916-1917	Jan. 28, 1918
4.	Leff Coal Mine	Albert Leff	Strip			1916-1917	Jan. 26, 1918
5.	Pearl Butte Coal Mine	Clarence Holdridge	Drift	Air shaft	Carbide	-1917	Reported April 4, 1918
6.	Minnehaha Coal Mine	Andrew Jepson	Strip			-1917	Reported Mar. 8, 1918
7.	Pinkham Coal Mine	Ray Pinkham	Slope	Air shaft	Carbide	1916-1917	Jan. 27, 1918
8.	Reeder Coal Mine	N. J. Wiedmeann	Drift	None	Carbide	Opened in 1917	Jan. 26, 1918
9.	Stephenson & Gunderson Coal Mine	Owners	Slope			Opened Slope 1917	Jan. 27, 1918
10.	Williamson Coal Mine	J. S. Williamson	Slope	None	Carbide	Opened Slope 1917	Jan. 28, 1918

BILLINGS COUNTY

No.	Name of Mine	Superintendent	Kind of Opening	Method of Ventilation	Method of Lighting	When Operated	Date of Inspection
11.	De Mores Coal Mine	H. G. Kinmark	Drift	Air shaft	Carbide	1916-1917	Jan. 15, 1918
12.	High Grade Coal Mine	N. D. Nichols	Drift	Air shaft and fan	Carbide	1916-1917	Jan. 15, 1918
13.	Red Trail Coal Mine	Geo. F. Gardner	Drift	Air shaft	Carbide	-1917	Jan. 15, 1918

BOWMAN COUNTY

No.	Name of Mine	Superintendent	Kind of Opening	Method of Ventilation	Method of Lighting	When Operated	Date of Inspection
14.	Bowman Coal Mine	J. C. Palmer	Slope	Air shaft	Carbide	1916-1917	Jan. 25, 1918
15.	Johnson Fuel Co. Coal Mine	A. L. Johnson	Slope	Air shaft	Carbide	1916-1917	Jan. 26, 1918

BURKE COUNTY

No.	Name of Mine	Superintendent	Kind of Opening	Method of Ventilation	Method of Lighting	When Operated	Date of Inspection
16.	Bonsness Coal Mine	O. E. Bonsness	Strip			Opened in 1917	Mar. 7, 1918
17.	Domress Coal Mine	Carl Larson	Strip			-1917	Mar. 7, 1918
18.	Fenster Coal Mine	H. J. Domrese	Slope and strip		Carbide	1916-1917	Mar. 8, 1918
19.	Hagen Coal Mine	Even & John Hagen	Slope	Air shaft	Carbide	1916-	Reported Jan. 9, 1917
20.	Kielhock Coal Mine	Kielhock & Wixom	Strip			1916-1917	Mar. 7, 1918
21.	Makee Coal Mine	Chas. Tauber	Shaft	Shaft	Carbide	1916-1917	Mar. 7, 1918
22.	Meade & Sims Coal Mine	J. Meade & M. Sims	Strip			Opened in 1917	Mar. 7, 1918
23.	Souther Coal Mine	L. Souther	Slope	Air shaft	Carbide	1916-1917	Mar. 8, 1918
24.	Sunlight Coal Mine	J. S. Greenup	Strip			1916-1917	Mar. 7, 1918
25.	Zimdars & Hall Coal Mine	H. Zimards & J. Hall	Slope	Air shaft	Carbide	1916-1917	Mar. 8, 1918

No.	Name of Mine	Superintendent	Kind of Opening	Method of Ventilation	Method of Lighting	When Operated	Date of Inspection
	BURLEIGH COUNTY						
26.	Asplund Coal Mine	T. J. Asplund	Slope	Air shaft	Carbide	1916-1917	Feb. 19, 1918
27.	Backman Coal Mine	Emil Backman	Slope	Air shaft	Carbide	1916-1917	Feb. 19, 1918
28.	Berger Coal Mine	C. H. Berger	Slope	Air shaft	Carbide	1916-1917	Feb. 20, 1918
29.	Laubach Coal Mine	M. L. Ferrick	Slope	Air shaft	Carbide	Opened Nov. 8, 1917	Feb. 20, 1918
30.	Lind Coal Mine	J. A. Johnson	Slope	Air shaft	Carbide	1916-1917	Feb. 19, 1918
31.	Peterson Coal Mine	Tom Scott	Slope	Air shaft	Carbide	1916-1917	Feb. 19, 1918
32.	Wilton Coal Mine	P. J. Cahill	Shaft	Air shaft	Electric & Carbide	1916-1917	Feb. 20, 1918
	DIVIDE COUNTY						
33.	Dougherty Coal Mine	Chas. Alton	Slope	Air shaft	Carbide	1916-1917	Mar. 9, 1918
34.	Hought Coal Mine	J. E. Hought	Slope	Air shaft	Carbide	1916-1917	Mar. 9, 1918
35.	Lorbeski Coal Mine	John Lorbeski	Short Slope	Air shaft	Carbide	1916-1917	Mar. 9, 1918
36.	Mathieson Coal Mine	Ludvig Mathieson	Slope	None	Carbide	1916-1917	Mar. 11, 1918
37.	Truax Coal Mine	E. M. Truax	Shaft	Air shaft	Carbide & Electric	1916-1917	Mar. 9, 1918
	DUNN COUNTY						
38.	Armbernst Coal Mine	Anton Armbernst	Strip			....-1917	Reported Mar. 23, 1918
39.	Bang Coal Mine	John Bang	Strip			1916-1917	Dec. 27, 1917
40.	Blecha Coal Mine	Tom Blecha	Strip			....-1917	Feb. 15, 1918
41.	L. A. Chase Coal Mine	W. A. Gonye	Strip			....-1917	Reported Mar. 13, 1918
42.	Heiser Coal Mine	S. M. Black	Strip			1916-1917	Feb. 15, 1918
43.	Hy Grade Coal Mine	A. H. Pelton	Shaft	Air shaft	Carbide	1916-1917	Feb. 15, 1918
44.	Paulson Coal Mine	Torger Helgeson	Drift	Air shaft	Carbide	1916-1917	Feb. 15, 1918
45.	Pulver and Logan Coal Mine	H. I. Dorwin	Strip			....-1917	Reported Mar. 6, 1918
46.	Sloan Coal Mine	Norton & Fritz	Drift	Air shaft	Carbide	1916-1917	Feb. 14, 1918
47.	Three Star Coal Mine	Sam Curley	Strip			....-1917	Reported Mar. 18, 1918
	GOLDEN VALLEY COUNTY						
48.	Corliss Coal Mine	I. J. Corliss	Drift	None	Carbide	....-1917	Jan. 14, 1918
49.	Cusick Coal Mine	J. Cusick	Drift	None	Gasoline torch	1916-1917	Jan. 14, 1918
50.	Grimm Coal Mine	J. P. Grimm	Drift	None	Lantern	1916-1917	Jan. 14, 1918
51.	Porter Coal Mine	W. H. Porter	Drift	None	Carbide	1916-1917	Jan. 14, 1918
52.	Sentinel Butte Coal Mine	R. L. Barnett	Drift	None	Carbide	1916-1917	Jan. 14, 1918

GRANT COUNTY

53.	Black Diamond Coal Mine	S. S. Houser	Shaft	Shaft	Carbide	1916-1917	Feb. 2, 1918
54.	Coffin Butte Coal Mine.	R. C. Babcock	Strip		Daylight	1916-1917	Reported Dec. 27, 1917
55	.Lehner Coal Mine	Jacob Lehner	Strip			....-1917	Feb. 2, 1918
56.	Miller Coal Mine	Lawrence Miller	Strip			1916-1917	Feb. 4, 1918
57.	Patzer Coal Mine	Adam Patzer	Drift	Air Shaft	Carbide	....-1917	Feb. 4, 1918
58.	Rock Coal Mine	Ray E. Rock	Strip			1916-....	Feb. 2, 1918
59.	Wolford Coal Mine	Wm. W. Wolford.	Strip			1916-1917	Reported Feb. 2, 1918

HETTINGER COUNTY

60.	Albrecht Coal Mine	C. A. Albrecht	Strip			....-1917	Reported Mar. 9, 1918
61.	Arnold Coal Mine	J. Wienandy	Drift	Old Drift	Carbide	1916-1917	Jan. 31, 1918
62.	Billman Coal Mine	A. D. Billman	Strip			....-1917	Reported Mar. 9, 1918
63.	Culver Coal Mine	V. Arnold	Strip			1916-1917	Jan. 30, 1918
64.	Davis Coal Mine	W. H. Murphy	Strip			1916-1917	Jan. 31, 1918
65.	Havelock Coal Mine	John Adams	Drift	No Shaft	Carbide	1916-1917	Jan. 31, 1918
66.	Kallis Coal Mine	Kallis Bros.	Strip			1916-1917	Feb. 4, 1918
67.	Kunze Coal Mine	Geo. Wilhelm	Drift	Air Shaft	Carbide	....-1917	Jan. 31, 1918
68.	Merry Coal Mine	C. H. Merry	Strip			1916-1917	Reported Jan. 1, 1918
69.	Nelson Coal Mine	Mons Nelson	Strip			1916-1917	Reported Dec. 12, 1917
70.	Rumph Coal Mine	C. W. Rumph	Strip			1916-1917	Reported Feb. 4, 1918
71.	Sadler Coal Mine	Henry Alguire	Slope	Air Shaft	Carbide	....-1917	Jan. 31, 1918
72.	Square Deal Coal Mine.	W. A. Crary	Strip			1916-1917	Reported Dec. 24, 1917
73.	Switzer Coal Mine	Presley Switzer	Strip			....-1917	Jan. 31, 1918
74.	Utter Coal Mine	Joseph E. Utter	Strip			....-1917	Feb. 4, 1918

McLEAN COUNTY

75.	Bitumina Coal Mine	Ewd. Kugler	Drift	Air shaft & compressed air	Carbide	1916-1917	Feb. 21, 1918
76.	Borchardt Coal Mine	E. G. Borchardt	Shaft	Air shaft & fan	Carbide	1916-1917	Feb. 22, 1918
77.	Elm Point Coal Mine	C. B. Thomas	Drift	Air shaft	Carbide	....-1917	Feb. 25, 1918
78.	Fjelddal Coal Mine	Fred Wagner	Slope	Air shaft	Carbide	1916-1917	Feb. 23, 1918
79.	Fredrich Coal Mine	Henry Fredrich	Shaft	Air shaft & gas driven fan	Carbide	1916-1917	Feb. 23, 1918
80.	Garrison Coal Mine	F. W. McGray	Slope	Air shaft with fan	Electric & Carbide	1916-1917	Feb. 27, 1918
81.	Hanson Coal Mine	Aug. Marks	Drift	Air shaft	Carbide	1916-1917	Feb. 23, 1918
82.	Johnson Coal Mine	Swan A. Johnson.	Slope	Air Shaft	Carbide	1916-1917	Feb. 26, 1918

McLEAN COUNTY—Continued

No.	Name of Mine	Superintendent	Kind of Opening	Method of Ventilation	Method of Lighting	When Operated	Date of Inspection
83.	Koenig Coal Mine	Adolph Schedler	Strip			....-1917	Reported Mar. 15, 1918
84.	Pfister Coal Mine	Fred Pfister	Drift	None	Carbide	1916-1917	Feb. 22, 1918
85.	Rupp Coal Mine	E. R. Rupp	Drift	Caved room.	Carbide	....-1917	Feb. 26, 1918
86.	Seibel Coal Mine	Frank Seibel	Strip			....-1917	Feb. 26, 1918
87.	*Ulrich Coal Mine	George Louser	Slope	Air shaft	Carbide	1916-....	Reported Jan. 16, 1917

MERCER COUNTY

No.	Name of Mine	Superintendent	Kind of Opening	Method of Ventilation	Method of Lighting	When Operated	Date of Inspection
88.	Beulah Coal Mine	M. P. Moore	Shaft	Steam driven fan	Entry. Electric. Carbide	....-1917	Feb. 12, 1918
89.	Dilger Coal Mine	Lawrence Dilger	Drift	None	Carbide	1916-1917	Feb. 13, 1918
90.	Gallagher Coal Mine	Ed. Boether	Strip			....-1917	Reported Mar. 6, 1918
91.	Golden Valley Coal Mine	G. S. Davis	Drift	None	Carbide	....-1917	Feb. 14, 1918
92.	Haven Coal Mine	Lee Haven	Drift	None	Carbide	....-1917	Feb. 14, 1918
93.	Ingold Coal Mine	Tom Figenskan	Strip			1916-1917	Feb. 14, 1918
94.	Keeley Coal Mine	Ulmer Bros.	Drift	None	Carbide	....-1917	Feb. 12, 1918
95.	Kesler Coal Mine	Geo. G. Schmidt	Drift	Air shaft	Carbide	....-1917	Feb. 13, 1918
96.	Koulberg Coal Mine	Albert Koulberg	Shaft	None	Carbide	....-1917	Feb. 12, 1918
97.	Krem Coal Mine	David Richter	Shaft	Air shaft	Carbide	1916-1917	Feb. 12, 1918
98.	Lucky Strike Coal Mine	Wm. Thurston	Slope	Air shaft	Carbide	....-1917	Feb. 13, 1918
99.	Myers Coal Mine	W. M. Ripple & Thos. Morris	Drift	Air shaft	Carbide	....-1917	Feb. 14, 1918
100.	Otness Coal Mine	Enoch Otness	Slope	None	Carbide	....-1917	Feb. 12, 1918
101.	Reichengberg Coal Mine	John Bartell	Drift	None	Carbide	1916-1917	Feb. 12, 1918
102.	Reigel Coal Mine	J. H. Reigel	Drift	None	Carbide	....-1917	Feb. 14, 1918
103.	*Standard Coal Mine	Geo. G. Schmidt	Slope			1916-1917	Feb. 13, 1918
104.	Schmidt Coal Mine	Geo. G. Schmidt	Slope	Air shaft	Carbide	1916-1917	Feb. 13, 1918

MORTON COUNTY

No.	Name of Mine	Superintendent	Kind of Opening	Method of Ventilation	Method of Lighting	When Operated	Date of Inspection
105.	*Coopenhaver Coal Mine	Not operated	Strip			1916-....	Reported Dec. 22, 1917
106.	Elmer Coal Mine	Joseph Elmer	Slope	Air shaft	Carbide	....-1917	Feb. 6, 1918
107.	Garfield Coal Mine	Halle Kansmann	Strip			1916-1917	Reported Dec. 27, 1917
108.	Harnisch Coal Mine	Robert Harnisch	Drift	Air shaft	Carbide	....-1917	Feb. 6, 1918
109.	Haymarsh Coal Mine	Simon Reinbold	Slope	Caved room.	Carbide	1916-1917	Feb. 7, 1918
110.	Hebron Coal Mine	F. Bennek	Drift	Air shaft & fan	Carbide	1916-1917	Feb. 6, 1918
111.	Knutson Coal Mine	C. G. Thor	Strip			1916-1917	Reported Mar. 24, 1918
112.	Kokakaler Coal Mine	Henry Kokakaler.	Strip			....-1917	Reported Feb. 8, 1918
113.	Kramer Coal Mine	Fred Kramer	Slope	Air Shaft	Carbide	1916-1917	Feb. 9, 1918
114.	Lange Coal Mine	F. C. Lange	Strip			1916-1917	Feb. 8, 1918
115.	Lidstrom Coal Mine	F. E. Brown	Slope	Air shaft		1916-1917	Feb. 8, 1918
116.	New Salem Coal Mine	A. J. Gray	Slope	Air Shaft	Carbide	1916-1917	Jan. 11, 1918

		MORTON COUNTY—Continued					
117.	North Star Coal Mine	John Chencz	Slope	None	Carbide	1916-1917	Feb. 6, 1918
118.	Ormiston Coal Mine	G. J. Ormiston	Drift	Air shaft	Carbide	1916-1917	Feb. 9, 1918
119.	Pleasant Ridge Coal Mine	Louis Kowoko	Slope	Air shaft	Carbide	1916-1917	Feb. 9, 1918
120.	Ramsland Coal Mine	Geo. Reichel	Strip			1916-1917	Dec. 24, 1917
121.	Wadeson Coal Mine	H. D. Wadeson	Slope		Carbide	1916-1917	Feb. 6, 1918
		MOUNTRAIL COUNTY					
122.	Blake Coal Mine	F. E. Blake	Strip			-1917	Mar. 20, 1918
123.	Everson Coal Mine	J. J. Everson	Strip	None	None	-1917	Mar. 21, 1918
124.	Hoppe Coal Mine	Herman Moerke	Strip			1916-1917	Mar. 21, 1918
125.	Kale Coal Mine	B. F. Kale	Strip			1916-1917	Mar. 20, 1918
126.	Porger Coal Mine	Geo. Porger	Drift	None	Carbide	1916-1917	Mar. 19, 1918
127.	Rodgers Coal Mine	G. S. Rodgers	Strip			1916-1917	Mar. 21, 1918
128.	Sellers Coal Mine	W. L. Sellers	Strip			1916-1917	Mar. 21, 1918
		OLIVER COUNTY					
129.	Barlow Coal Mine	D. T. Barlow	Strip			1916-1917	Jan. 8, 1918
130.	Meyhoff Coal Mine	Dick Meyhoff	Strip			1916-1917	Reported Jan. 8, 1918
131.	Pleasant Valley Coal Mine	Wm. Mahlmann & Wm. Boerner	Strip			1916-1917	Jan. 8, 1918
132.	Spring Valley Coal Mine	N. O. Nelson	Strip			1916-1917	Jan. 7, 1918
133.	Tripp Coal Mine	N. O. Nelson	Strip			1916-1917	Jan. 7, 1918
		RENVILLE COUNTY					
134.	Tehelka Coal Mine	P. P. Tehelka	Slope	None	Carbide	1916-1917	Mar. 4, 1918
135.	White Ash Coal Mine	Roy Hopkins	Drift	None	Carbide	Opened in 1917	Mar. 4, 1918
136.	Wooster Coal Mine	L. E. Herzberg	Drift	None	Carbide	-1917	Mar. 4, 1918
		SLOPE COUNTY					
137.	Krenz Coal Mine	R. Koschnick	Strip	None	None	-1917	Reported Mar. 8, 1918
		STARK COUNTY					
138.	Gross Coal Mine	Carl Podolanchuk	Slope	None	Carbide	1916-1917	Reported Dec. 22, 1917
139.	Hokos & Benek Coal Mine	J. Hokos	Shaft	None	Carbide	Opened in 1917	Jan. 12, 1918
140.	Lehigh Coal Mine	Roy Butler	Slope	Air shaft	Electric & Carbide	1916-1917	Jan. 12, 1918
141.	North Creek Coal Mine	Deane Wiley	Strip			1916-1917	Dec. 28, 1917
142.	North Star Coal Mine	John Ostoj	Slope	Air shaft	Carbide	1916-1917	Jan. 16, 1918
143.	Pittsburg Coal Mine	A. G. Morton	Slope	Air shaft	Carbide	1916-1917	Jan. 12, 1918
144.	St. Mary's Coal Mine	Father Othmer	Slope	Air shaft	Carbide	1916-1917	Jan. 16, 1918
145.	Zenith Coal Mine	Henry Truelson	Slope	Air shaft	Carbide	1916-1917	Jan. 16, 1918

WARD COUNTY

No.	Name of Mine	Superintendent	Kind of Opening	Method of Ventilation	Method of Lighting	When Operated	Date of Inspection
146.	Bartoshivich Coal Mine.	Joe Bartoshivich..	Drift	None	Carbide	1916-1917	Feb. 27, 1918
147.	Burlington City Coal Mine	J. W. Perlechek	Slope	Air shaft	Carbide	1916-1917	Mar. 1, 1918
148.	Coflisch Coal Mine	J. C. Willoughby..	Drift	Air shaft	Carbide	1916-1917	Feb. 27, 1918
149.	Clark Coal Mine	G. V. Clark	Slope	Air shaft	Carbide	....-1917	Mar. 6, 1918
150.	Colton Coal Mine	L. D. Colton	Slope	Air shaft	Carbide	1916-1917	Mar. 2, 1918
151.	Conan Coal Mine	J. F. Casteel	Slope	Air shaft	Carbide	1916-1917	Mar. 2, 1918
152.	Crosby Coal Mine	Martin Erickson	Drift	Air shaft	Carbide	1916-1917	Mar. 6, 1918
153.	Davis Coal Mine	M. P. Botsford	Slope	Air shaft	Carbide	1916-1917	Mar. 1, 1918
154.	Dakota Coal Co. Coal Mine	B. A. Pratt	Slope	Air shaft	Carbide	1916-1917	Mar. 3, 1918
155.	Diamond Coal Mine	C. P. O'Neil	Slope	Air shaft	Carbide	1916-1917	Mar. 7, 1918
156.	Farmers' Coal Mine	O. R. Hanson	Drift	Air shaft	Carbide	1916-1917	Mar. 6, 1918
157.	Foxholm Coal Mine	Mack Hendricks	Shaft	Air shaft	Carbide	1916-1917	Mar. 4, 1918
158.	Hot Blast Coal Mine	Mr. Miller	Slope		Carbide	1916-....	Mar. 5, 1918
159.	Houston Coal Mine	Dave Houston	Slope	None	Carbide	....-1917	Mar. 2, 1918
160.	Hunnewell Coal Mine	R. J. Hunnewell	Drift	Air shaft	Carbide	1916-1917	Mar. 2, 1918
161.	Johnson Coal Mine	Jonas Johnson	Shaft & Slope		Carbide	1916-1917	Mar. 6, 1918
162.	Klondike Coal Mine	L. C. Spencer	Drift	None	Carbide	1916-1917	Mar. 5, 1918
163.	Larson Coal Mine	Gust Larson	Drift	Air shaft	Carbide	....-1917	Mar. 2, 1918
164.	Leeson No. 1 Coal Mine	J. J. Leeson	Drift	Air shaft	Carbide	1916-1917	Feb. 27, 1918
165.	Leeson No. 2 Coal Mine	J. J. Leeson	Drift	Air shaft	Carbide	1916-1917	Feb. 27, 1918
166.	Lloyd Coal Mine	H. M. Graves	Slope	Air shaft	Carbide	1916-1917	Mar. 3, 1918
167.	Mellon Coal Mine	Peter Mellon	Slope	Air shaft	Carbide	1916-1917	Mar. 3, 1918
168.	Rich Coal Mine	John A. Rohe	Shaft	None	Carbide	1916-1917	Mar. 3, 1918
169.	Seed Coal Mine	Jake Clementich	Drift	None	Carbide	....-1917	Mar. 2, 1918
170.	National Coal Mine	J. W. Deemy	Drift	Air shaft	Carbide	1916-1917	Mar. 6, 1918
171.	Square Deal Coal Mine..	Stephen Hodgson..	Drift	None	Carbide	1916-1917	Mar. 5, 1918
172.	Superior Coal Mine	Wallace Bros.	Slope	Air shaft	Carbide	....-1917	Mar. 2, 1918
173.	Tree-Bausch Coal Mine.	Jas. Sells	Strip	None	Carbide	1916-1917	Feb. 27, 1918
174.	Vadnais Coal Mine	James Harper	Drift	Air shaft	Carbide	1916-1917	Mar. 6, 1918
175.	Wallace Coal Mine	Wallace Bros.	Drift	Air shaft	Carbide	1916-1917	Mar. 1, 1918
176.	Wood Coal Mine	M. G. Wood	Drift	Air shaft	Carbide	1916-1917	Feb. 27, 1918

WILLIAMS COUNTY

177.	Aanonson Coal Mine	Thor Aanonson	Drift	None	Carbide	1916-1917	Mar. 19, 1918
178.	Black Beauty Coal Mine	Fred Gotham	Drift	Air shaft	Carbide	1916-1917	Mar. 19, 1918

WILLIAMS COUNTY—Continued

179.	Black Diamond Coal Mine	F. W. Frye	Drift	Air shaft & fan	Carbide	1916-1917	Mar. 14, 1918
180.	Big Four Coal Mine	Ben Fedje	Drift	Air shaft	Carbide	1916-1917	Mar. 18, 1918
181.	Bryant Coal Mine	F. A. Bryant	Shaft	None	Carbide	1916-....	Mar. 16, 1918
182.	Bryne Coal Mine	Aleck Thompson	Drift	Air shaft	Carbide	1916-1917	Mar. 14, 1918
183.	East Ellithorpe Coal Mine	C. Ellithorpe	Drift	Air shaft	Carbide	....-1917	Mar. 15, 1918
184.	Ellithorpe Coal Mine	C. Ellithorpe	Drift	Air shaft	Carbide	1916-1917	Mar. 15, 1918
185.	Erkie Coal Mine	I. L. Erkie	Drift	None	Carbide	....-1917	Mar. 19, 1918
186.	Falk Coal Mine	Ole Falk	Slope	Air shaft	Carbide	1916-1917	Mar. 19, 1918
187.	Folvog Coal Mine	H. E. Folvog	Slope	Air shaft	Carbide	1916-1917	Reported Dec. 29, 1917
188.	Freeman Coal Mine	T. J. Freeman	Drift	None	Carbide	1916-....	Mar. 19, 1918
189.	Haugen Coal Mine	Edward E. Haugen	Drift	None	Carbide	....-1917	Mar. 19, 1918
190.	Head Coal Mine	P. G. Head	Drift	Air shaft	Carbide	1916-1917	Mar. 18, 1918
191.	Husebye Coal Mine	J. A. Husebye	Drift & Fan				
			Shaft	(Electric)	Carbide	1916-1917	Mar. 15, 1918
192.	Johnson Coal Mine	John Johnson	Drift	Air shaft	Carbide	1916-1917	Mar. 19, 1918
193.	Lein Coal Mine	O. P. Lein	Drift	Air shaft	Carbide	....-1917	Mar. 20, 1918
194.	Lovejoy Coal Mine	E. F. Lovejoy	Drift	Air shaft	Carbide	1916-1917	Mar. 16, 1918
195.	Miller Coal Mine	A. C. Miller	Drift	None	Carbide	1916-1917	Mar. 18, 1918
196.	Moorman Coal Mine	J. M. Moorman	Drift	Air shaft	Carbide	1916-1917	Reported Dec. 22, 1917
197.	Narveson Coal Mine	N. Narveson	Drift	Air shaft	Carbide	1916-1917	Mar. 19, 1918
198.	Nelson & Anderson Coal Mine	Jas. Nelson & Andrew Anderson	Drift	Air shaft	Carbide	....-1917	Mar. 19, 1918
199.	Reclamation Service Coal Mine	F. P. Field	Drift	Air shaft & fan	Carbide	1916-1917	Mar. 15, 1918
200.	Seabrook Coal Mine	James Seabrook	Drift	None	Carbide	....-1917	Mar. 19, 1918
201.	Todd Coal Mine	D. I. Todd	Drift	Air shaft	Carbide	....-1917	Mar. 16, 1918
202.	Vizina Coal Mine	C. S. Vizina	Drift	None	Carbide	....-1917	Mar. 14, 1918

*Abandoned.

TABLE NO. 2.
ADAMS COUNTY

No.	Name of Mine	Depth of Coal Bed Feet	Thickness of Coal Bed, Feet	Thickness of Coal Mined, Ft	System of Mining	Method of Mining	How Delivered at Surface
1.	Clermont Coal Mine	25	16	10	Double entry	Blast off solid	Steam hoist
2.	Haynes Coal Mine	40	14	9 —10	Double entry	Blast off solid	Steam hoist
3.	Hettinger Electric Light and Power Co. Coal Mine	60	10	8	Single entry	Machine mining	Steam hoist
4.	Leff Coal Mine	6—15	8	8	Surface	Blast off solid	.....
5.	Pearl Butte Coal Mine	45	12 —14	9	Single entry	Blast off solid	Horse power
6.	Minnehaha Coal Mine	5—7	2 — 3½	all	Surface	Blast off solid	.....
7.	Pinkham Coal Mine	35	14	9½	Single entry	Blast off solid	Team and cable
8.	Reeder Coal Mine	35	8	6	Double entry	Blast off solid	Horse power
9.	Stephenson & Gunderson Coal Mine	35—100	12½	9 —10	.....	.....	Horse power
10.	Williamson Coal Mine	70	15	10	Double entry	Blast off solid	Horse power
	BILLINGS COUNTY						
11.	De Mores Coal Mine	300	7½	5½	Single entry	Blast off solid	Hand power
12.	High Grade Coal Mine	274	7½— 9	6 — 7	Double entry	Blast off solid	Horse power
13.	Red Trail Coal Mine	200	7	5	Double entry	Blast off solid	Horse power
	BOWMAN COUNTY						
14.	Bowman Coal Mine	24	30	15	Single entry	Blast off solid	Horse power
15.	Johnson Fuel Co. Coal Mine	10— 30	19	7	Double entry	Blast off solid	Horse power
	BURKE COUNTY						
16.	Bonsness Coal Mine	9	4 — 5	4 — 5	Surface	Blast off solid	.....
17.	Domrese Coal Mine	8— 10	9 —10	9 —10	Surface	Blast off solid	.....
18.	Fenster Coal Mine	10	9	9	Strip and Single entry	..... Blast off solid	Team and cable
19.	Hagen Coal Mine	10	6	5½	Single entry	Blast off solid	Gas engine hoist
20.	Kielhock Coal Mine	10— 18	8 —10	8 —10	Surface	Blast off solid	.....
21.	Makee Coal Mine	30	6 — 6½	5½	Single entry	Blast off solid	Team and cable
22.	Meade & Sims Coal Mine	7	8	8	Surface	Blast off solid	.....
23.	Souther Coal Mine	23	9 —11	6 — 7	Single entry	Blast off solid	Steam hoist
24.	Sunlight Coal Mine	18	10	10	Surface	Blast off solid	.....
25.	Zimdars & Hall Coal Mine	24	8	6	Single entry	Blast off solid	Gas engine hoist
	BURLEIGH COUNTY						
26.	Asplund Coal Mine	70	12	8	Single entry	Blast off solid	Team and cable
27.	Backman Coal Mine	50	12	8	Single entry	Blast off solid	Gas engine hoist
28.	Berger Coal Mine	30	6	5½	Single entry	Blast off solid	Team and cable
29.	Laubach Coal Mine	80	4½	4	Single entry	Blast off solid	Team and cable

BURLEIGH COUNTY—Continued.

30.	Lind Coal Mine	30	10 —11	8	Single entry	Blast off solid	Team and cable
31.	Peterson Coal Mine	80	9 —13	7	Single entry	Blast off solid	Team and cable
32.	Wilton Coal Mine	60	13	9	Panel system	Machine mining	Steam hoist

DIVIDE COUNTY

33.	Dougherty Coal Mine	39	7	6½	Double entry	Blast off solid	Steam hoist
34.	Hought Coal Mine	34	7	6½— 7	Double entry	Blast off solid	Horse power
35.	Lorbeski Coal Mine	30	6 — 7	6	Double entry	Blast off solid	Horse power
36.	Mathieson Coal Mine	50	28	10	Single entry	Blast off solid	Team and cable
37.	Truax Coal Mine	45	7 — 9	6½— 7	Double entry	Machine mining	Steam hoist

DUNN COUNTY

38	Armbernst Coal Mine	5— 10	3 — 4	3 — 4	Surface	Blast off solid	.....
39.	Bang Coal Mine	9	14	14	Surface	Blast off solid	.....
40.	Blecha Coal Mine	20— 35	5½— 6	5½— 6	Surface	Blast off solid	.....
41.	Chase Coal Mine	7	4	4	Surface	Blast off solid	.....
42.	Heiser Coal Mine	8— 9	5	5	Surface	Blast off solid	.....
43.	Hy Grade Coal Mine	30— 50	20	10	Single entry	Blast off solid	Steam hoist
44.	Paulson Coal Mine	35	16 —18	8	Single entry	Blast off solid	Horse power
45.	Pulver & Logan Coal Mine	4— 5	5	5	Surface	Blast off solid	.....
46.	Sloan Coal Mine	30	7	6	Single entry	Blast off solid	Horse power
47.	Three Star Coal Mine	10	16	16	Surface	Blast off solid	.....

GOLDEN VALLEY COUNTY

48.	Corliss Coal Mine	20	18	9	Single entry	Blast off solid	Horse power
49.	Cusick Coal Mine	50—300	28	12	Single entry	Blast off solid	Horse power
50.	Grimm Coal Mine	50—150	30	9	Single entry	Blast off solid	Horse power
51.	Porter Coal Mine	40	30	9	Single entry	Blast off solid	Horse power
52.	Sentinel Butte Coal Mine	200	32	11	Single entry	Blast off solid	Team and wagon

GRANT COUNTY

53.	Black Diamond Coal Mine	32	8 — 8½	5½	Single entry	Blast off solid	Gas engine hoist
54.	Coffin Butte Coal Mine	8— 16	9	9	Surface	Blast off solid	.....
55.	Lehner Coal Mine	14	4	4	Surface	Blast off solid	.....
56.	Miller Coal Mine	10	4	4	Surface	Blast off solid	.....
57.	Patzer Coal Mine	31	6	6	Single entry	Blast off solid	Hand power
58.	Rock Coal Mine	7— 8	4½	4½	Surface	Blast off solid	.....
59	Wolford Coal Mine	16	7	7	Surface	Blast off solid	.....

HETTINGER COUNTY

No.	Name of Mine	Depth of Coal Bed Feet	Thickness of Coal Bed, Feet	Thickness of Coal Mined, Ft	System of Mining Surface	Method of Mining Blast off solid	How Delivered at Surface
60.	Albrecht Coal Mine	6— 12	6½	6½	Surface	Blast off solid	.....
61.	Arnold Coal Mine	40	14	9	Single entry	Blast off solid	Horse power
62.	Billman Coal Mine	4	4½	4½	Surface	Blast off solid	.....
63.	Culver Coal Mine	10	8	8	Surface	Blast off solid	.....
64.	Davis Coal Mine	20	6	6	Surface	Blast off solid	.....
65.	Havelock Coal Mine	30	11	8	Single entry	Blast off solid	Horse power
66.	Kallis Coal Mine	10— 20	7½	7½	Surface	Blast off solid	.....
67.	Kunze Coal Mine	35	14	10	Single entry	Blast off solid	Horse power
68.	Merry Coal Mine	10— 30	10	10	Surface	Blast off solid	.....
69.	Nelson Coal Mine	4— 5	4	4	Surface	Blast off solid	.....
70.	Rumph Coal Mine	18	5 — 6	5 — 6	Surface	Blast off solid	.....
71.	Sadler Coal Mine	30— 35	11	10	Double entry	Blast off solid	Steam hoist
72.	Square Deal Coal Mine	3— 8	4 — 5½	4 — 5½	Surface	Blast off solid	.....
73.	Switzer Coal Mine	7— 21	9	9	Surface	Blast off solid	.....
74.	Utter Coal Mine	6— 15	6½	6½	Surface	Blast off solid	.....

McLEAN COUNTY

75.	Bitumina Coal Mine	100	9½—11	8	Double entry	Machine mining	Horse power
76.	Borchardt Coal Mine	38	12	8	Double entry	Blast off solid	Horse power
77.	Elm Point Coal Mine	185	8	8	Double entry	Blast off solid	Horse power
78.	Fjelddal Coal Mine	40	11	7	Single entry	Blast off solid	Horse power
79.	Fredrich Coal Mine	59	6	6	Single entry	Blast off solid	Whim
80.	Garrison Coal Mine	40— 50	7	5½	Double entry	Machine mining	Steam hoist
81.	Hanson Coal Mine	55	11	7	Single entry	Blast off solid	Horse power
82.	Johnson Coal Mine	31	7	6	Double entry	Blast off solid	Team and cable
83.	Koenig Coal Mine	16	8 —10	8 —10	Surface	Blast off solid	.....
84.	Pfister Coal Mine	30	8	7	Single entry	Blast off solid	Horse power
85.	Rupp Coal Mine	12— 50	7 — 7½	6	Single entry	Blast off solid	Horse power
86.	Seibel Coal Mine	9	6	6	Surface	Blast off solid	.....
87.	Ulrich Coal Mine	Abandoned					

MERCER COUNTY

88.	Beulah Coal Mine	40—100	12 —14	8	Double entry	Blast off solid	Steam hoist
89.	Dilger Coal Mine	30— 60	16	10	Single entry	Blast off solid	Horse power
90.	Gallagher Coal Mine	6— 10	4	4	Surface	Blast off solid	.....
91.	Golden Valley Coal Mine	30	6	6	Single entry	Blast off solid	Hand power
92.	Haven Coal Mine	30	6	6	Single entry	Blast off solid	Hand power
93.	Ingold Coal Mine	30	6	6	Single entry	Blast off solid	Hand power
94.	Keeley Coal Mine	40— 70	4	4	Single entry	Blast off solid	Hand power
95.	Kesler Coal Mine	30	18	14	Single entry	Blast off solid	Horse power

MERCER COUNTY—Continued

96.	Koulberg Coal Mine	60— 75	4½— 5	4½	Single entry	Blast off solid	Horse power
97.	Krem Coal Mine	54	13	7	Double entry	Blast off solid	Gas engine hoist
98.	Lucky Strike Coal Mine	25— 50	7½	6	Single entry	Blast off solid	Horse power
99.	Myers Coal Mine	15— 40	4½	4½	Single entry	Blast off solid	Horse power
100.	Otness Coal Mine	30	4	4	Single entry	Blast off solid	Horse power
101.	Reichengberg Coal Mine	40— 7	4	4	Single entry	Blast off solid	Hand power
102.	Reigel Coal Mine	10— 40	6	5	Single entry	Blast off solid	Horse power
103.	Standard Coal Mine	60	12	Aband.			
104.	Schmidt Coal Mine	22	23	15	Single entry	Blast off solid	Horse power

MORTON COUNTY

105.	Coopenhaver Coal Mine	16½	4½	4½	Surface	Blast off solid	.....
106.	Elmer Coal Mine	34	6	6	Double entry	Blast off solid	Horse power
107.	Garfield Coal Mine	6— 12	4½	4½	Surface	Blast off solid	.....
108.	Harnisch Coal Mine	60	5½— 7	6	Single entry	Blast off solid	Horse power
109.	Haymarsh Coal Mine	35	9 —10	7 — 8	Single entry	Blast off solid	Horse power
110.	Hebron Coal Mine	50— 70	8	7	Single entry	Blast off solid	Horse power
111.	Knutson Coal Mine	20	7½— 8	7½— 8	Surface	Blast off solid	.....
112.	Kokakaler Coal Mine	3— 6	3 — 6	3 — 6	Surface	Pick mining	.....
113.	Kramer Coal Mine	30	7	6½	Single entry	Blast off solid	Gas engine hoist
114.	Lange Coal Mine	8	8	8	Surface	Blast off solid	.....
115.	Lidstrom Coal Mine	50	9 —11	9 —10	Single entry	Blast off solid	Horse power
116.	New Salem Coal Mine	50	5½— 6	5	Double entry	Blast off solid	Gas engine hoist
117.	North Star Coal Mine	80	8	6 — 7	Double entry	Blast off solid	Horse power
118.	Ormiston Coal Mine	15— 40	7	6	Single entry	Blast off solid	Hand power
119.	Pleasant Ridge Coal Mine	50— 60	6	5½	Double entry	Blast off solid	Horse power
120.	Ramsland Coal Mine	14	4 — 4½	4 — 4½	Surface	Blast off solid	.....
121.	Wadeson Coal Mine	55	5 — 7	6	Single entry	Blast off solid	Horse power

MOUNTRAIL COUNTY

122.	Blake Coal Mine	20	3 2-3	3 2-3	Surface	Blast off solid	.....
123.	Everson Coal Mine	75	3	3	Single entry	Pick mining	Hand power
124.	Hoppe Coal Mine	6— 15	6	6	Surface	Blast off solid	.....
125.	Kale Coal Mine	20	3½	3½	Surface	Blast off solid	.....
126.	Porger Coal Mine	120	6 — 7	6	Single entry	Blast off solid	Hand power
127.	Rodgers Coal Mine	10— 30	7	7	Surface	Blast off solid	.....
128.	Sellers Coal Mine	6— 20	7	7	Surface	Blast off solid	.....

No.	Name of Mine	Depth of Coal Bed Feet	Thickness of Coal Bed, Feet	Thickness of Coal Mined, Ft	System of Mining	Method of Mining	How Delivered at Surface
	OLIVER COUNTY						
129.	Barlow Coal Mine	12	7½	7½	Surface	Blast off solid	.....
130.	Meyhoff Coal Mine	10	13	13	Surface	Blast off solid	.....
131.	Pleasant Valley Coal Mine	14	17	17	Surface	Blast off solid	.....
132.	Spring Valley Coal Mine	18	8 —11	5 — 8	Surface	Blast off solid	.....
133.	Tripp Coal Mine	18	10 —12	10 —12	Surface	Blast off solid	.....
	RENVILLE COUNTY						
134.	Tehelka Coal Mine	30— 80	2½	2½	Single entry	Pick mining	Horse power
135.	White Ash Coal Mine	40— 80	2½	2½	Single entry	Pick mining	Horse power
136.	Wooster Coal Mine	80	3	3	Single entry	Pick mining	Hand power
	SLOPE COUNTY						
137.	Krenz Coal Mine	12	7	7	Surface	Blast off solid	.....
	STARK COUNTY						
138.	Gross Coal Mine	25	6 — 8	5	Single entry	Blast off solid	Horse power
139.	Hohos & Benek Coal Mine	70	12½	8	Double entry	Blast off solid	Steam hoist
140.	Lehigh Coal Mine	27	12	6 — 7	Double entry	Machine mining	Horse power
141.	North Creek Coal Mine	20	15 —20	12	Surface	Blast off solid	
142.	North Star Coal Mine	50—100	6	5	Double entry	Blast off solid	Horse power
143.	Pittsburg Coal Mine	90	10 —11	7 — 8	Double entry	Blast off solid	Steam hoist
144.	St. Mary's Coal Mine	60	6	5	Single entry	Blast off solid	Horse power
145.	Zenith Coal Mine	30— 75	18 —22	8 — 9	Single entry	Blast off solid	Steam hoist
	WARD COUNTY						
146.	Bartoshivich Coal Mine	75	16	8 — 9	Single entry	Blast off solid	Horse power
147.	Burlington City Coal Mine	20—120	10 —11	7	Double entry	Blast off solid	Electric hoist
148.	Coflisch Coal Mine	30	12	8	Single entry	Blast off solid	Horse power
149.	Clark Coal Mine	40— 80	4	4	Double entry	Blast off solid	Steam hoist
150.	Colton Coal Mine	30—115	10	7	Double entry	Blast off solid	Horse power
151.	Conan Coal Mine	30—100	11	7 — 8	Double entry	Blast off solid	Steam hoist
152.	Crosby Coal Mine	50—130	5½	5½	Double entry	Blast off solid	Hand power
153.	Davis Coal Mine	200	9	7	Double entry	Blast off solid	Steam hoist
154.	Dakota Coal Co. Coal Mine	4—120	7	7	Double entry	Machine mining	Horse power
155.	Diamond Coal Mine	50	5	4½	Double entry	Pick mining	Horse power
156.	Farmers' Coal Mine	145	5½	5½	Single entry	Pick mining	Hand power
157.	Foxholm Coal Mine	50	10	7	Double entry	Blast off solid	Gas engine hoist
158.	Hot Blast Coal Mine	70	2½	2½	Single entry	Blast off solid	Horse power
159.	Houston Coal Mine	20—150	9	7	Single entry	Blast off solid	Horse power

WARD COUNTY—Continued

160.	Hunnewell Coal Mine	50—100	10	6 — 7	Double entry	Blast off solid	Horse power
161.	Johnson Coal Mine	110	5 — 5½	5 — 5½	Double entry	Blast off solid	Steam hoist
162.	Klondike Coal Mine	20— 70	3	3	Single entry	Pick mining	Horse power
163.	Larson Coal Mine	50—150	9	7	Double entry	Blast off solid	Horse power
164.	Leeson No. 1 Coal Mine	40	12	8	No system	Blast off solid	Horse power
165.	Leeson No. 2 Coal Mine	35	14	7 — 8	Single entry	Blast off solid	Horse power
166.	Lloyd Coal Mine	60—150	9	6	Double entry	Blast off solid	Steam hoist
167.	Mellon Coal Mine	50	4	4	Double entry	Pick mining	Horse power
168.	Rich Coal Mine	8—135	5½	5½	Double entry	Pick mining	Steam hoist
169.	Seed Coal Mine	20—150	9	6	Entry being driven	Blast off solid	Horse power
170.	National Coal Mine	80	5	5	Double entry	Blast off solid	Electric motor
171.	Square Deal Coal Mine	30—100	3 — 4	3 — 4	Single entry	Blast off solid	Horse power
172.	Superior Coal Mine	60—150	9	6	Double entry	Blast off solid	Horse power
173.	Tree-Bausch Coal Mine	16	14	14	Surface	Blast off solid	.....
174.	Vadnais Coal Mine	30— 40	4	4	Single entry	Blast off solid	Horse power
175.	Wallace Coal Mine	100—175	9	7	Double entry	Blast off solid	Horse power
176.	Wood Coal Mine	40	10	7	Single entry	Blast off solid	Gas engine hoist

WILLIAMS COUNTY

177.	Aanonson Coal Mine	30— 40	7	6	Single entry	Blast off solid	Hand power
178.	Black Beauty Coal Mine	45	7	6	Single entry	Blast off solid	Horse power
179.	Black Diamond Coal Mine	80— 90	9	7	Double entry	Blast off solid	Horse power
180.	Big Four Coal Mine	50	7	6	Single entry	Blast off solid	Horse power
181.	Bryant Coal Mine	76	8½	7	Double entry	Blast off solid	Horse power
182.	Bryne Coal Mine	20— 80	8 —10	7	Single entry	Blast off solid	Horse power
183.	East Ellithorpe Coal Mine	80— 90	9	6	Double entry	Blast off solid	Hand power
184.	Ellithorpe Coal Mine	150	9 —11	6½— 7½	Double entry	Blast off solid	Horse power
185.	Erkie Coal Mine	60	8	6	Single entry	Blast off solid	Hand power
186.	Falk Coal Mine	42	8	6	Single entry	Blast off solid	Gas engine hoist
187.	Folvog Coal Mine	40— 60	10	7	Single entry	Blast off solid	Horse power
188.	Freeman Coal Mine	50	7 — 8	6 — 7	Single entry	Blast off solid	Hand power
189.	Haugen Coal Mine	50	7	6	Single entry	Blast off solid	Hand power
190.	Head Coal Mine	35	11 —15	8	Single entry	Blast off solid	Horse power
191.	Husebye Coal Mine	60	10	7	Double entry	Machine mining	Steam hoist
192.	Johnson Coal Mine	40	7	7	Single entry	Blast off solid	Team and cable
193.	Lein Coal Mine	50	7	6	Single entry	Blast off solid	Hand power

WILLIAMS COUNTY—Continued

No.	Name of Mine	Depth of Coal Bed Feet	Thickness of Coal Bed, Feet	Thickness of Coal Mined, Ft	System of Mining	Method of Mining	How Delivered at Surface
194.	Lovejoy Coal Mine	47	10	8	Double entry	Blast off solid	Horse power
195.	Miller Coal Mine	50	9	7	Single entry	Blast off solid	Horse power
196.	Moorman Coal Mine	50	10	7 — 9	Double entry	Blast off solid	Hand power
197.	Narveson Coal Mine	30	8	6	Single entry	Blast off solid	Hand power
198.	Nelson & Anderson Coal Mine	84	8	6 — 7	Single entry	Blast off solid	Horse power
199.	Reclamation Service Coal Mine	92	10½	7	Double entry	Blast off solid	Horse power
200.	Seabrook Coal Mine	40	7	7	Single entry	Blast off solid	Hand power
201.	Todd Coal Mine	60	9 —10	7	Single entry	Blast off solid	Horse power
202.	Vizina Coal Mine	80	11 —12	7	Single entry	Blast off solid	Hand power

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TABLE NO. 3
ADAMS COUNTY

No.	Name of Mine	Year	No. days Operated	Average days per month		Average No of miners		Average daily proudction	Average No. of men other than miners		Average price paid miners per ton		Average daily wages
				Winter	Summer	Winter	Summer	Tons	Winter	Summer	Room	Entry	
1.	Clermont Coal Mine ...	1916	180	20	10	6	3	23.1	2	..	.50	*...	2.50–2.75
		1917	240	25	15	6	3	23.7	3	1	.55	*...	3.00–5.00
2.	Haynes Coal Mine	1916	288	24	24	6	4	28.3	5	2	...	...	2.50–3.00
		1917	276	26	20	30	10	58.0	4	2	.60	.75	2.50–3.50
3.	Hettinger Electric Light & Power Co. Coal Mine	1916	104	28	..	10	..	21.4	3	..	...	...	3.00
		1917	312	26	26	7	3	18.0	3	3	...	...	3.00
4.	Leff Coal Mine	1916	180	20	10	2	1	7.5	1	1	...	...	2.00
		1917	120	10	10	1	1	4.2	1	1	...	...	2.00
5.	Pearl Butte Coal Mine	1916	Not operating		..	..	..	....	..	..			
		1917	156	26	..	2	..	7.0	1	..	...	...	1.25–3.60
6.	Minnehaha Coal Mine ...	1916	Not operating		..	..	..	....	..	..			
		1917	36	6	..	3	..	7.5	..	..	...	...	2.25**
7.	Pinkham Coal Mine	1916	60	10	..	5	..	10.8	1	..	...	...	1.50
		1917	150	25	..	2	..	11.2	..	..	.50	...	1.75**
8.	Reeder Coal Mine	1916	Not operating		..	..	..	....	..	..			
		1917	60	10	..	1	..	11.5	1	..	...	...	3.50
9.	Stephenson & Gunderson Coal Mine	1916	180	20	10	2	1	7.4	1	..	...	...	2.50
		1917	Not in operation		..	..	..	....	..	..			
		1916	Not in operation		..	..	..	....	..	..			
10.	Williamson Coal Mine..	1917	60	10	..	2	..	6.1	1	..	...	...	4.00
	BILLINGS COUNTY												
11.	De Mores Coal Mine ...	1916	120	20	..	1	..	4.9	..	..	.65	.75	...
		1917	120	20	..	1	..	5.1	..	..	.75	.75	...
12.	High Grade Coal Mine..	1916	240	20	20	12	7	85.5	3	2	.65	.85	3.25
		1917	240	20	20	20	10	96.0	9	4	.70	.80	3.50-4.00
13.	Red Trail Coal Mine ...	1916	No report		..	..	..	....	..	..			
		1917	114	15	4	9	3	56.5	5	..	.80	1.50	3.00–3.75
	BOWMAN COUNTY												
14.	Bowman Coal Mine	1916	156	26	..	5	..	21.1	2	..	...	...	2.00–3.00
		1917	180	20	10	2	1	8.2	1	..	.80	.80	2.50–4.00
15.	Johnson Fuel Co. Coal Mine	1916	284	25	22	9	4	48.5	5	2	.60	.70o	2.50-3.00
		1917	112	13	17	6	9	92.0	1	1	.60	...	...
											.75oo	...	3.50–4.00

BURKE COUNTY

16.	Bonsness Coal Mine	1916	Not operating		..	..	..	....	..	..			
		1917	46	7	..	1	..	6.8	..	..	...	...	2.00
17.	Domrese Coal Mine	1916	No report		..	..	..	....	..	..			
		1917	120	20	..	3	..	7.0	..	..	...	...	3.00
18.	Fenster Coal Mine	1916	156	26	..	6	..	19.2	..	..	.75	1.00	1.50
		1917	120	20	..	8	..	25.00	..	..		...	2.50
19.	Hagen Coal Mine.....	1916	120	20	..	3	..	3.4	..	..	...	...	1.50
		1917	Not operating		..	..	..	....	..	..			
20.	Kielhock Coal Mine	1916	156	26	..	10	..	51.0	1	..	.60	1.00	1.50
		1917	108	9	9	13	3	68.0	3	1	...	...	3.00
21.	Makee Coal Mine	1916	240	25	15	3	1	6.0	..	..	.75	.90	...
		1917	168	21	7	2	1	5.3	..	..	.75	.90	...
22.	Meade & Sims Coal Mine	1916	Not operating		..	..	..	....	..	..			
		1917	102	17	10	3	3	14.5	..	..			3.00
23.	Souther Coal Mine	1916	240	20	20	8	2	24.6	3	..	.60	.85	2.00
		1917	240	20	20	10	2	26.8	3	..	.70	.90	...
24.	Sunlight Coal Mine	1916	120	20	..	8	..	62.0	..	..	...	...	2.50
		1917	114	13	6	6	2	49.3	2	..	...	...	4.00
25.	Zimdars & Hall Coal Mine	1916	No report		..	..	..	....	..	..			
		1917	120	20	..	2	..	5.0	..	..	.90	1.25	2.50–2.75

*$1.00 per lineal foot of entry.
**and board.
o and $1.00 per lineal yard.
oo and room necks $3.00 extra.

BURLEIGH COUNTY

26.	Asplund Coal Mine	1916	156	20	6	2	1	15.6	2	..	.85	1.00	...
											1.00	1.25	2.50
		1917	156	20	6	3	1	24.4	2	..	.90	1.00	...
27.	Backman Coal Mine	1916	60	10	..	1	..	6.1	..	..	.75	1.00	2.00
		1917	120	15	5	2	1	6.7	..	..	.90	1.20	...
28.	Berger Coal Mine	1916	120	20	..	2	..	4.2	..	..	.75	.90	2.00
		1917	120	20	..	2	..	6.2	..	..	.75	.90	2.00
29.	Laubach Coal Mine	1916	Not operating		..	..	..	....	..	..			
		1917	48	8	..	2	..	8.5	..	..	1.00	1.00	...

BURLEIGH COUNTY—Continued

No.	Name of Mine	Year	No. days Operated	Average days per month		Average No. of miners		Aver. daily production	Aver. No. of men other than miners		Average price paid miners per ton		Average daily wages
				Win.	Sum.	Win.	Sum.	Tons	Win.	Sum.	Room	Entry	
30.	Lind Coal Mine	1916	156	16	10	2	1	13.1	1	..	.75	.90	2.50–3.00
		1917	216	26	10	4	1	22.0	1	1	.90	.90	2.00–3.00
31.	Peterson Coal Mine	1916	312	26	26	2	1	5.4	1	1	.80	1.10	...
		1917	276	26	20	2	1	3.8	1	..	.90	.90	...
32.	Wilton Coal Mine.....	1916	264	24	20	122	60	890.0	119	87	...*	...*	2.50 & up
		1917	276	26†	20†	148	79	945.0	148	144	...*	...*	...*
	DIVIDE COUNTY												
33.	Dougherty Coal Mine ...	1916	66	11	..	3	..	17.8	2	..	.70	.95	2.00-2.25
		1917	300	26	24	16	5	39.0	4	2	.90	1.10	250.–4.00
34.	Hought Coal Mine	1916	276	26	20	25	10	67.3	12	3	.70	1.00	1.75–2.00
		1917	312	26	26	30	12	90.0	16	4	.70	1.10	...
											.95	1.35	2.00–4.00
35.	Lorbeski Coal Mine	1916	156	26	..	7	..	35.0	3	..	.70	1.00	2.00**
											...	...	4.00**
		1917	240	20	20	10	2	31.5	2	1	.70	1.25	...
											.95	1.35	2.00–4.00
36.	Mathieson Coal Mine...	1916	No report		..	..	..	....	..	..			
		1917	60	10	..	2	..	2.5	..	..	...	...	2.00
37.	Truax Coal Mine.....	1916	312	26	26	25	20	82.0	25	15	.70	1.00o	1.75
		1917	276	26	20	35	18	200.00	30	15	.70	.90	...
											1.00	1.40*	2.00–3.00
	DUNN COUNTY												
38.	Armbernst Coal Mine ..	1916	Not operating		..	..	..	....	..	..			
		1917	60	10	..	2	..	3.3	..	..	...	...	2.00
39.	Bang Coal Mine	1916	90	15	..	2	..	4.4	..	..	1.00	1.00	...
		1917	60	10	..	1	..	3.5	..	..	1.00	1.00	...
40.	Blecha Coal Mine	1916	Not operating		..	..	..	....	..	..			
		1917	60	10	..	1	..	3.3	..	..	...	...	1.50
41.	Chase Coal Mine	1916	Not operating		..	..	..	....	..	..			
		1917	72	12	..	2	..	2.8	..	..	...	...	Ft. note 1

*Miners: Room coal 38c per ton; entry coal 39c and 9c per ton yardage; pillars coal cut by machine 42c per ton; pillar coal in solid 54c per ton. Machine cutting: Room coal 7c per ton; entry coal 7c and 3c per ton extra for yardage; pillars 6c per ton. Drivers 4c per ton. Machine men were allowed 10% additional and miners in certain cases were allowed an additional 10%. June 1st all machine men were increased 15% over above wages and miners all increased 25% over above wages.

* Estimated.

**and board

o and 40c per lineal foot of entry.

Foot note No. 1. $40 per month and board.

DUNN COUNTY—Continued

42.	Heiser Coal Mine	1916	90	15	..	2	..	2.8	..	..	...	...	2.00
		1917	90	15	..	2	..	2.8	..	..	...	...	2.00
43.	Hy Grade Coal Mine....	1916	156	26	..	2	..	3.2	1	..	.75	1.50	2.50–3.00
		1917	156	26	..	2	..	6.8	1	..	.85	.85oo	3.00
44.	Paulson Coal Mine	1916	156	26	..	3	..	8.2	..	..	...	...	3.00
		1917	156	26	..	3	..	7.0	..	..	...	...	3.00
45.	Pulver & Logan Coal Mine	1916	Not operating		..	..	..	....	..	..			
		1917	60	10	..	1	..	2.0	..	..	...	...	2.50
46.	Sloan Coal Mine	1916	90	15	..	2	..	7.8	..	..	...	...	2.50
		1917	180	20	10	3	1	8.8	..	..	...	...	2.50–3.00
47.	Three Star Coal Mine..	1916	Not operating		..	..	..	....	..	..			
		1917	120	20	..	1	..	3.5	..	..	...	...	3.00

GOLDEN VALLEY COUNTY

48.	Corliss Coal Mine	1916	No report		..	..	..	....	..	..			
		1917	120	20	..	1	..	3.3	..	..	...	...	3.00
49.	Cusick Coal Mine	1916	72	12	..	1	..	2.8	..	..	...	...	2.00
		1917	72	12	..	1	..	3.1	..	..	...	...	2.50
50.	Grimm Coal Mine	1916	144	24	..	2	..	5.4	..	..	.60	...	...
		1917	156	26	..	3	..	7.5	1	..	.75	.75	...
51.	Porter Coal Mine	1916	60	10	..	2	..	5.0	..	..	...	...	2.00
		1917	54	9	..	1	..	3.7	..	..	...	...	2.00
52.	Sentinel Butte Coal Mine	1916	No report		..	..	..	....	..	..			
		1917	90	15	..	1	..	5.0	..	..	.65	...	...
											.75	...	...

GRANT COUNTY

53.	Black Diamond Coal Mine	1916	192	17	15	3	2	7.9	1	1	1.00	1.50	2.50–2.75
		1917	276	26	20	2	1	9.1	1	..	1.20	...	3.00
		1916	276	26	20	1	1	4.7	..	..	...	...	3.00
54.	Coffin Butte Coal Mine	1917	276	26	20	3	2	7.2	..	..	...	...	3.00
		1916	Not operated		..	..	..	....	..	..			
55.	Lehner Coal Mine	1917	72	12	..	2	..	8.3	..	..	...	...	2.50
		1916	90	15	..	2	..	8.9	..	..	...	...	2.50
56.	Miller Coal Mine	1917	90	15	..	2	..	8.9	..	..	...	...	3.00

oo and $1.00 per lineal yard.

GRANT COUNTY—Continued

No.	Name of Mine	Year	No. days Operated	Average days per month		Average No. of miners		Aver. daily production Tons	Aver. No. of men other than miners		Average price paid miners per ton		Average daily wages
				Win.	Sum.	Win.	Sum.		Win.	Sum.	Room	Entry	
		1916	Not operated	..		..	..	....	..	..			
57.	Patzer Coal Mine	1917	54	9	..	2	..	8.7	..	..	...	...	2.50
		1916	72	12	..	2	..	6.5	..	..	...	...	2.50
58.	Rock Coal Mine	1917	Not operated		..	..	..	....	..	..			
		1916	72	12	..	2	..	7.0	..	..	...	...	2.50
59.	Wolford Coal Mine	1917	72	12	..	2	..	7.0	..	..	...	...	2.50
	HETTINGER COUNTY												
60.	Albrecht Coal Mine	1916	No report		..	..	..	....	..	..			
		1917	108	10	8	4	2	16.5	..	..	...	...	2.50
61.	Arnold Coal Mine	1916	312	26	..	2	..	6.7	..	..	...	...	2.00
		1917	120	20	..	4	..	10.0	..	..	.75	1.00	2.50
62.	Billman Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	30	5	..	1	..	3.3	..	..	...	...	2.00
63.	Culver Coal Mine	1916	120	20	..	2	..	8.9	..	..	...	...	2.00-3.00
		1917	120	20	..	1	..	5.0	..	..	...	...	2.00
64.	Davis Coal Mine	1916	120	20	..	1	..	4.2	..	..	...	...	2.50
		1917	120	20	..	1	..	4.2	..	..	...	...	2.50
65.	Havelock Coal Mine	1916	36	6	..	2	..	7.5	..	..	.60	...	2.00
		1917	156	26	..	4	..	10.3	..	..	.70	...	...
											.80	...	2.00
66.	Kallis Coal Mine	1916	156	26	..	2	..	6.4	..	..	...	...	2.00-3.00
		1917	156	26	..	1	..	3.1	..	..	...	...	2.00-3.00
67.	Kunze Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	120	20	..	2	..	5.0	1	..	.60	...	...
											1.00	...	...
68.	Merry Coal Mine	1916	144	24	..	2	1	8.0	..	..	...	...	2.00
		1917	144	24	..	2	1	7.2	..	..	...	...	2.50
69.	Nelson Coal Mine	1916	120	20	..	1	..	3.7	..	..	...	...	2.00
		1917	120	20	..	1	..	3.7	..	..	...	...	2.00
70.	Rumph Coal Mine	1916	120	10	10	2	1	5.8	..	..	...	...	2.00-3.00
		1917	120	10	10	3	1	9.0	..	..	...	...	2.00-3.00
71.	Sadler Coal Mine	1916	No report		..	..	..	....	..	..			
		1917	210	20	15	6	2	21.4	3	1	.80	.90	3.00-4.80
72.	Square Deal Coal Mine.	1916	240	10	10	2	2	10.0	..	..	...	...	2.00-3.00
		1917	180	20	10	3	2	13.9	..	..	...	...	2.00-3.00
73.	Switzer Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	120	10	10	2	2	6.7	..	..	...	...	2.00-3.00
74.	Utter Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	120	10	10	1	1	5.1	..	..	...	...	2.00-2.50

McLEAN COUNTY

75.	Bitumina Coal Mine	1916	312	26	26	7	2	25.2	3	2	.40	...	...
											.45*	.43*	2.75
		1917	312	26	26	6	2	23.0	3	2	.44	.44	...
											.55*	.55*	2.75–3.00
76.	Borchardt Coal Mine ...	1916	264	24	20	1	1	2.3	1	1	...	...	2.00
		1917	264	24	20	2	1	2.7	1	..	...	...	2.00–3.00
77.	Elm Point Coal Mine..	1916	No report		..	..	..	....	..	..			
		1917	90	15	..	3	..	11.5	..	..	.75	.90	3.00
78.	Fjelddal Coal Mine	1916	72	12	..	3	..	17.1	..	..	.53	.63	...
		1917	204	24	..	3	..	11.4	..	..	.60	.80	3.00
79.	Fredrich Coal Mine	1916	72	12	..	2	..	8.3	2	..	.60	.90	2.00
		1917	156	26	..	3	..	9.2	2	..	.80	1.10	2.00
80.	Garrison Coal Mine	1916	192	26	6	6	2	15.6	1	1	.85	1.30	2.00–2.50
		1917	288	24	24	13	3	49.0	6	2	.75	.85	3.00–3.60
81.	Hanson Coal Mine	1916	288	24	24	3	1	12.4	2	1	.60	.72	1.50
		1917	264	24	20	4	2	16.3	3	1	.70	.90	2.50
82.	Johnson Coal Mine	1916	120	20	..	2	..	4.3	1	..	.65	1.10	2.50
		1917	144	24	..	4	..	8.3	2	..	.85	1.20	3.00
83.	Koenig Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	60	10	..	1	..	2.7	..	..	...	...	1.50–2.50
84.	Pfister Coal Mine	1916	180	20	10	2	..	5.0	..	..	...	...	2.50
		1917	180	20	10	2	..	5.0	..	..	...	...	2.50
85.	Rupp Coal Mine	1916	No report		..	..	..	....	..	..			
		1917	60	10	..	7	..	33.4	2	..	.80	1.00	2.00**
86.	Seibel Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	240	20	20	3	2	12.2	..	..	...	...	2.00–3.00
87.	Ulrich Coal Mine	1916	60	10	..	4	..	15.9	2	..	.75	1.10	2.00
		1917	Not operated		..	..	..	....	..	..			

MERCER COUNTY

88.	Beulah Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	48	8	..	12	..	79.0	7	..	.70	1.00	3.25
89.	Dilger Coal Mine	1916	120	20	..	1	..	4.2	1	..	...	...	2.50
		1917	120	20	..	3	..	12.0	1	..	...	...	2.50
90.	Gallagher Coal Mine ...	1916	No report		..	..	..	....	..	..			
		1917	90	15	..	1	..	3.0	..	..	...	...	2.00

*Machine cut coal.

**and board.

MERCER COUNTY—Continued

No.	Name of Mine	Year	No. days Operated	Average days per month		Average No. of miners		daily Aver. production Tons	Aver. No. of men other than miners		Average price paid miners per ton		Average daily wages
				Win.	Sum.	Win.	Sum.		Win.	Sum.	Room	Entry	
91.	Golden Valley Coal Mine	1916	No report			..	..	....	..	..			
		1917	60	10	..	1	..	1.5	..	..	...	...	2.00
92.	Haven Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	48	8	..	1	..	3.1	..	..	...	...	2.00
93.	Ingold Coal Mine	1916	90	15	..	2	..	3.3	..	..	...	...	2.00
		1917	90	15	..	3	..	5.5	..	..	...	...	2.00
94.	Keeley Coal Mine	1916	No report		..	..	..	....	..	..			
		1917	60	10	..	2	..	3.3	..	..	1.00	...	2.00
95.	Kesler Coal Mine.....	1916	No report		..	..	..	....	..	..			
		1917	48	8	..	3	..	6.7	1	..	...	...	3.00
96.	Koulberg Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	10	1	..	3	Opening Mine		..	..			
97.	Krem Coal Mine	1916	66	11	..	2	..	8.1	1	..	1.00	1.00	...
		1917	120	20	..	3	..	12.8	1	..	1.00	...	...
98.	Lucky Strike Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	150	25	..	3	..	10.0	1	..	...	...	2.00–3.00
99.	Myers Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	120	20	..	1	..	3.3	..	..	...	...	2.00–3.00
100.	Otness Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	90	15	..	2	..	3.3	..	..	...	...	2.00–3.00
101.	Reichengberg Coal Mine	1916	180	20	10	3	1	7.9	1	..	...	...	2.00–3.00
		1917	180	20	10	5	3	15.3	2	1	1.00	1.00	2.00–3.00
102.	Reigel Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	...	..	..	4	Opening Mine		..	..			
103.	Standard Coal Mine ...	1916	240	20	20	10	2	37.5	2	2	.75	1.00	2.00–3.00
		1917	60	10	..	8	..	16.0	2	..	.75	1.00	2.00–3.00
104.	Schmidt Coal Mine	1916	156	26	..	4	..	6.5	1	..	...	...	2.75
		1917	60	10	..	2	..	4.5	..	..	.75	.75	....

MORTON COUNTY

105.	Coopenhaver Coal Mine	1916	60	10	..	6	..	19.2	..	..	...	...	2.00
		1917	Not operated		..	..	..	....	..	..			
106.	Elmer Coal Mine	1916	Not operated		..	..	..	....	..	..			
		1917	120	10	10	2	1	4.2	1	1	...	...	3.00–4.50
107.	Garfield Coal Mine	1916	150	15	10	2	1	9.0	..	..	...	...	2.00–3.00
		1917	108	10	8	1	1	5.3	..	..	...	...	2.00–3.00
108.	Harnisch Coal Mine ...	1916	No report		..	..	..	....	..	..			
		1917	288	24	24	2	2	11.5	1	1	...	...	3.00–4.00

MORTON COUNTY—Continued

109.	Haymarsh Coal Mine ..	1916	60	10	..	2	..	2.5	..	..	...	...	2.00–3.00
		1917	90	15	..	2	..	5.0	..	..	...	...	2.50–3.50
110.	Hebron Coal Mine	1916	312	26	26	10	8	59.0	3	1	80	...*	2.50–3.50
		1917	312	26	26	10	7	61.5	3	1	1.05	...*	3.00–3.50
111.	Knutson Coal Mine ...	1916	60	10	..	2	..	4.2	..	..	...	...	2.50–3.00
		1917	180	20	10	2	1	7.8	..	..	...	...	2.75
112.	Kokakaler Coal Mine ..	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	60	10	..	1	..	2.5	..	..	...	...	2.00
113.	Kramer Coal Mine	1916	90	15	..	3	..	5.0	..	..	...	...	2.00–3.00
		1917	240	20	20	4	2	16.7	3	2	...	...	2.00–4.00
114.	Lange Coal Mine	1916	120	10	10	2	1	2.9	..	..	...	...	2.00–3.00
		1917	120	10	10	2	1	3.3	..	..	...	...	2.00–3.00
115.	Lidstrom Coal Mine ...	1916	150	15	10	1	1	4.5	..	..	.75	1.00	...
		1917	150	15	10	1	1	4.4	..	..	.75	1.00	...
116.	New Salem Coal Mine .	1916	240	20	20	6	4	25.2	4	4	.48	...	...
											.75	.55	3.00
		1917	240	20	20	6	4	26.6	4	2	.75	...	...
											.87	...	3.00
117.	North Star Coal Mine..	1916	312	26	26	2	2	12.2	2	2	.75	...	2.75
		1917	240	20	20	4	2	10.3	2	1	.75	...	3.50–4.00
118.	Ormiston Coal Mine ...	1916	60	10	..	2	..	4.2	1	..	.75	1.00	...
		1917	60	10	..	2	..	4.2	1	..	.75	1.00	...
119.	Pleasant Ridge Coal Mine	1916	312	26	26	3	2	8.0	1	..	.85	...	4.00
		1917	240	20	20	2	1	8.0	1	..	1.00	...	...
120.	Ramsland Coal Mine ...	1916	180	20	10	2	1	6.1	..	..	...	...	3.00–4.00
		1917	150	15	10	2	1	6.0	..	..	...	...	3.00–4.00
121.	Wadeson Coal Mine	1916	30	5	..	1	..	2.0	..	..	...	...	2.50–3.50
		1917	60	10	..	1	..	4.3	1	..	...	...	2.50–3.50

MOUNTRAIL COUNTY

122.	Blake Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	18	3	..	1	..	3.2	..	..	...	...	....
123.	Everson Coal Mine	1916	No report		..	..	..	....	..	..	...	...	....
		1917	36	6	..	1	..	5.2	..	..	...	...	3.00
124.	Hoppe Coal Mine	1916	312	26	26	2	2	3.1	..	..	...	...	2.00
		1917	312	26	26	3	1	3.5	..	..	...	...	2.00

*$1.25 per lineal foot.

MOUNTRAIL COUNTY—Continued

No.	Name of Mine	Year	No. days Operated	Average days per month		Average No. of miners		Aver. daily production Tons	Aver. No. of men other than miners		Average price paid miners per ton		Average daily wages
				Win.	Sum.	Win.	Sum.		Win.	Sum.	Room	Entry	
125.	Kale Coal Mine	1916	180	20	10	1	1	1.7	..	..	...	...	2.50
		1917	180	20	10	1	1	1 .7	..	..	...	...	2.50
126.	Porger Coal Mine	1916	120	10	..	2	..	4.5	..	..	...	...	2.00
		1917	60	10	..	2	..	4.8	..	..	...	...	2.50
127.	Rodgers Coal Mine	1916	150	15	10	2	1	3.3	..	..	...	...	2.00
		1917	60	10	..	2	..	3.3	..	..	...	...	2.50
128.	Sellers Coal Mine	1916	90	10	5	2	1	5.5	..	..	...	...	3.00
		1917	216	76	10	2	1	9.2	..	..	...	...	3.00
	OLIVER COUNTY												
129.	Barlow Coal Mine	1916	60	6	4	1	1	4.1	..	..	.75	.85	...
		1917	150	15	10	1	1	4.3	..	..	.75	.85	...
130.	Meyhoff Coal Mine	1916	180	20	10	2	3	14.0	..	..	...	...	2.00–3.00
		1917	60	5	5	1	1	2.3	..	..	...	...	3.00
131.	Pleasant Valley Coal Mine	1916	180	20	10	2	2	8.9	..	..	...	...	3.00
		1917	180	20	10	2	3	10.5	..	..	...	...	3.00
132.	Spring Valley Coal Mine	1916	120	10	10	1	1	3.1	..	..	...	...	2.75
		1917	180	20	10	2	1	5.6	..	..	.75	.75	3.00
133.	Tripp Coal Mine	1916	120	10	10	1	1	3.6	..	..	...	...	2.50
		1917	180	15	10	1	1	3.6	..	..	...	...	2.50
	RENVILLE COUNTY												
134.	Tehelka Coal Mine	1916	60	10	..	2	..	3.6	1	..	...	...	3.00
		1917	60	10	..	1	..	3.3	1	..	...	...	3.00
135.	White Ash Coal Mine ..	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	30	5	..	2	..	5.0	..	..	...	...	3.00
136.	Wooster Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	...	..	3	Opening Mine					...	...	....
	SLOPE COUNTY												
137.	Krenz Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	90	15	..	2	..	4.5	..	..	...	...	2.50
	STARK COUNTY												
138.	Gross Coal Mine	1916	60	10	..	1	..	2.5	..	..	1.00	1.00	...
		1917	30	5	..	1	..	1.3	..	..	...	...	2.00
139.	Hokos & Benek Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	60	10	..	4	..	11.4	..	..	...	...	3.00–5.00

STARK COUNTY—Continued

140.	Lehigh Coal Mine	1916	228	20	18	15	5	65.0	10	4	.40	.45	...
											.70	.85	2.50–3.30
		1917	228	20	18	15	5	61.7	10	4	.44	.50	...
											.55	1.00	3.00–3.75
141.	North Creek Coal Mine	1916	120	10	10	1	1	2.2	..	..	...	...	2.00
		1917	120	10	10	1	1	1.7	..	..	...	...	2.00
142.	North Star Coal Mine..	1916	216	26	10	4	2	13.8	1	1	.80	1.00	2.50
		1917	216	26	10	3	1	7.0	1	..	.80	1.00	3.00
143.	Pittsburg Coal Mine ...	1916	246	26	15	18	3	56.0	8	2	.66	.82½	3.30-3.50
		1917	246	26	15	30	15	105.0	10	5	.70	.80	...
144.	St. Mary's Coal Mine ..	1916	312	26	26	1	1	1.6	1	1	...	...	...**
		1917	312	26	26	2	1	5.5	1	1	...	...	...**
145.	Zenith Coal Mine	1916	312	26	26	26	15	89.0	8	1	.66	.82	3.30–3.50
		1917	312	26	26	30	20	96.0	10	3	.70	.85	3.25–3.50

WARD COUNTY

146.	Bartoshivich Coal Mine.	1916	150	15	10	3	1	4.2	..	..	.75	1.00	...
		1917	150	15	10	2	1	3.8	1	..	.75	...	...
147.	Burlington City Coal	1916	288	24	24	9	3	33.5	3	3	.70	.90	...
											.80	1.00	1.50–3.50
	Mine	1917	288	24	24	9	4	33.0	7	4	.80	1.00	...
											1.00	1.25	3.00–4.00
148.	Coflisch Coal Mine	1916	120	10	10	3	1	14.3	2	2	.70	1.00	2.00
		1917	180	20	10	3	1	12.0	..	..	.80	...	...
149.	Clark Coal Mine	1916	No report		..	..	..	....	..	..	...	...	....
		1917	120	20	..	4	..	12.5	..	..	1.25	...	...
150.	Colton Coal Mine	1916	186	26	5	4	2	27.2	3	2	.80	1.00	2.75
		1917	186	26	5	4	2	21.5	3	2	1.00	1.25	3.50
151.	Conan Coal Mine	1916	174	24	5	4	1	14.4	3	1	.80	1.00	3.00
		1917	204	24	10	6	2	29.0	3	1	1.00	1.25	3.50–4.00
152.	Crosby Coal Mine	1916	60	10	..	3	..	7.5	1	..	.80	1.00	3.00
		1917	120	20	..	4	..	8.3	1	..	1.00	1.25	3.00–4.00
153.	Davis Coal Mine	1916	264	24	20	18	8	43.5	10	4	.70	.80	...
											.80	1.00	2.50–4.00
		1917	258	26	17	20	8	57.0	16	4	.80	1.00	2.50–4.00

**$35 per month and board.

WARD COUNTY—Continued

No.	Name of Mine	Year	No. days Operated	Average days per month		Average No. of miners		Aver. daily production Tons	Aver. No. of men other than miners		Average price paid miners per ton		Average daily wages
				Win.	Sum.	Win.	Sum.		Win.	Sum.	Room	Entry	
154.	Dakota Coal Co. Coal Mine	1916	204	23	11	18	8	45.0	10	4	.70	.90	...
											.80	1.00*	3.00-3.25
		1917	312	26	26	16	6	34.0	18	9	.80	1.00	...
											1.00	1.30	2.75-5.00
155.	Diamond Coal Mine	1916	168	20	8	3	2	10.1	2	1	.80	1.00	...
		1917	114	15	4	2	1	6.1	1	1	.80	...	...
											1.20	1.25	...
156.	Farmers' Coal Mine	1916	60	10	..	3	..	7.9	2	..	.80	...	...
		1917	156	13	13	3	3	12.0	..	..	1.20	1.40	4.00
157.	Foxholm Coal Mine	1916	210	20	15	6	3	22.8	6	3	...	...	2.25-3.00
		1917	288	24	24	15	6	23.4	8	4	.85	.85	...
											1.00	1.00o	2.75-4.00
158.	Hot Blast Coal Mine...	1916	60	10	..	2	..	1.6	..	..	1.00	1.25o	...
		1917	Not operated		..	..	..	....	..	..	...	...	....
159.	Houston Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	120	20	..	2	..	1.6	..	..	1.00	...	...
160.	Hunnewell Coal Mine ..	1916	312	26	26	4	1	6.4	1	..	.80	1.00	3.00
		1917	312	26	26	6	1	11.1	1	..	.80	1.00	...
											1.00	1.25	4.00
161.	Johnson Coal Mine	1916	312	26	26	10	2	21.0	2	..	.90	1.70	...
		1917	288	24	24	9	3	20.2	3	1	1.00	1.80	...
											1.10	2.00	3.00-4.00
162.	Klondike Coal Mine	1916	60	10	..	3	..	6.8	1	..	...	...	2.75-3.00
		1917	60	10	..	3	..	6.7	..	..	...	...	3.00-4.00
163.	Larson Coal Mine	1916	No report		..	..	..	....	..	..	...	...	....
		1917	90	15	..	3	..	6.9	..	..	1.00	1.25	...
164.	Leeson No. 1 Coal Mine	1916	240	20	20	4	2	12.5	2	..	.70	.70	2.00
		1917	288	24	24	5	2	12.5	3	1	.75	.75	3.00
165	Leeson No. 2 Coal Mine	1916	312	26	26	3	3	9.6	1	..	.75	.75	2.25
		1917	132	26	26	3	1	8.0	..	..	.75	.75	3.00
166.	Lloyd Coal Mine	1916	288	24	24	12	4	32.5	6	2	.70	.90	...
											.80	1.00	2.50-3.00
		1917	288	24	24	15	10	60.7	8	7	.80	1.00	...
											1.00	1.40	3.00-4.00

o50c to 75c per lineal foot of entry.
*40c to 55c per lineal foot of entry.

WARD COUNTY—Continued

167.	Mellon Coal Mine	1916	120	10	10	3	1	5.8	..	..	1.00	1.25	2.00
		1917	240	20	20	4	2	4.3	..	..	1.25	1.50	2.50
168.	Rich Coal Mine	1916	60	10	..	1	..	1.6	..	..	...	...	2.50
		1917	New mine being opened								...	...	....
169.	Seed Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	60	10	..	1	..	1.7	..	..	...	...	2.50
170.	National Coal Mine	1916	288	20	20	25	25	69.0	14	14	.60	.75	...
											.80	.90	3.00
		1917	312	26	26	26	12	53.5	20	13	.80	.90	...
											.90	1.05	3.50–4.50
171.	Square Deal Coal Mine.	1916	120	20	..	2	..	4.0	2	..	1.00	1.20	2.00
		1917	120	20	..	3	..	4.2	2	..	1.00	1.20	2.50
172.	Superior Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	60	10	..	2	..	2.7	..	..	...	...	3.00
173.	Tree-Bausch Coal Mine	1916	90	15	..	1	..	4.2	..	..	.70	...	...
		1917	144	24	..	1	..	3.6	..	..	...	...	3.00
174.	Vadnais Coal Mine	1916	120	20	..	3	..	7.5	1	..	1.00	...	...
		1917	120	20	..	3	..	6.7	..	..	1.25	...	4.00
175.	Wallace Coal Mine	1916	270	23	22	10	5	44.3	8	6	.70	.80	...
											.80	.90	2.50–3.25
		1917	288	24	24	14	8	46.7	10	6	.80	1.00	...
											1.00	1.25	2.50–4.00
176.	Wood Coal Mine	1916	216	26	10	5	1	15.5	2	1	.70	1.00	1.50–2.00*
		1917	240	20	20	5	2	16.7	2	1	.80	1.15	2.00*

WILLIAMS COUNTY

177.	Aanonson Coal Mine ...	1916	24	4	..	1	..	2.0	..	..	...	...	2.00
		1917	120	20	..	2	..	3.7	..	..	...	...	2.50
178.	Black Beauty Coal Mine	1916	30	5	..	1	..	2.7	1	..	...	1.10	2.50–3.00
		1917	150	15	10	4	2	18.7	1	1	.90	1.10	...
											1.05	1.35	2.00–3.00
179.	Black Diamond Coal Mine	1916	210	20	15	6	1	22.0	1	..	.70	.90	3.00
		1917	264	24	20	8	2	33.0	1	1	.70	.90	...
											.85	1.05	3.00–4.00
180.	Big Four Coal Mine	1916	108	18	..	3	..	5.6	1	..	.80	.90	2.00–2.50
		1917	90	15	..	2	..	4.4	1	..	.85	.95	2.50
181.	Bryant Coal Mine	1916	90	15	..	2	..	4.4	1	..	.80	.90	2.00
		1917	Not operated		..	..	..	....	..	..	...	...	....

* and Board

WILLIAMS COUNTY—Continued

No.	Name of Mine	Year	No. days Operated	Average days per month		Average No. of miners		Aver. daily production Tons	Aver. No. of men other than miners		Average price paid miners per ton		Average daily wages
				Win.	Sum.	Win.	Sum.		Win.	Sum.	Room	Entry	
182.	Bryne Coal Mine	1916	144	24	..	6	..	19.0	1	..	.80	.90	2.50
		1917	264	24	20	6	4	20.0	2	1	.85	1.05	4.00
183.	East Ellithorpe Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	252	22	20	2	1	2.5	..	..	...	...	3.00-4.00
184.	Ellithorpe Coal Mine ...	1916	300	25	25	14	2	24.0	2	..	.70	.90	...
											.75	.95	3.00–4.50
		1917	312	26	26	8	1	23.8	3	..	.90*	1.15*	3.50–4.00
185.	Erkie Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	60	10	..	1	..	2.0	..	..	...	...	3.00
186.	Falk Coal Mine	1916	240	20	20	4	2	11.2	..	..	1.00	1.00	...
		1917	240	20	20	2	2	4.8	..	..	1.00	1.00	3.00
187.	Folvog Coal Mine	1916	120	20	..	2	..	4.1	..	..	.75	1.00	...
		1917	120	20	..	2	..	6.2	..	..	.80	1.00	...
188.	Freeman Coal Mine	1916	60	10	..	2	..	5.8	..	..	...	...	3.00
		1917	No report		..	..	..	....	..	..	...	...	....
189.	Haugen Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	60	10	..	1	..	2.0	..	..	...	...	3.50
190.	Head Coal Mine	1916	264	24	20	4	1	11.1	..	..	.70	.90	3.00
		1917	288	24	24	8	2	20.8	1	..	75	.95	...
											.95	1.15	3.00–4.00
191.	Husebye Coal Mine	1916	300	25	25	17	3	50.0	4	2	.70	.90	...
											.75	1.00	3.00–3.25
		1917	300	25	25	17	4	52.5	6	3	.80	1.05	...
											.90	1.15	3.50–4.00
192.	Johnson Coal Mine	1916	120	20	..	2	..	3.3	..	..	1.00	1.00	...
		1917	144	24	..	3	..	4.8	..	..	1.00	1.10	4.00
193.	Lein Coal Mine	1916	No report		..	..	..	....	..	..	...	...	....
		1917	120	20	..	3	..	5.4	1	..	1.15	1.35	...
194.	Lovejoy Coal Mine	1916	180	20	10	6	2	27.8	3	..	.75	1.00	...
		1917	210	20	15	6	3	31.0	2	..	.75	1.00	...
											1.00	1.25	3.00–4.00
195.	Miller Coal Mine	1916	90	15	..	2	..	3.5	..	..	1.00	1.10	...
		1917	120	20	..	2	..	4.1	..	..	1.00	1.20	...

*and 10c per ton for work in water,

WILLIAMS COUNTY—Continued

196.	Moorman Coal Mine	1916	150	20	5	3	1	8.0	..	..	1.00	1.00	...
		1917	180	20	10	3	1	8.7	..	..	1.00	1.00	...
197.	Narveson Coal Mine	1916	120	20	..	2	..	8.3	1	..	1.00	1.00	...
		1917	120	20	..	2	..	6.7	1	..	1.00	1.00	...
198.	Nelson & Anderson Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	60	10	..	2	..	5.0	..	..	...	...	3.00
199.	Reclamation Service Coal Mine	1916	325	27	27	4	3	23.5	2	2	.60	.60	3.00–5.00
		1917	340	28	28	5	3	26.9	2	2	.70	.25*	3.50
200.	Seabrook Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	120	20	..	2	..	2.5	..	..	...	...	3.25
201.	Todd Coal Mine	1916	Not operated		..	..	..	....	..	..	...	...	....
		1917	120	20	..	2	..	3.3	..	..	...	...	3.50
202.	Vizina Coal Mine	1916	Development work only			..	..	....	..	..	...	...	....
		1917	60	10	..	2	..	3.3	..	..	...	...	3.00

*and 25c per lineal foot of entry.

TABLE NO. 4

ADAMS COUNTY

No.	Name of Mine	Main Entry			Rooms			
		Length feet	Width feet	Height feet	Length feet	Width feet	Heigth feet	Width of pillar feet
1.	Clermont Coal Mine	400	7	7	200	16	10	15
2.	Haynes Coal Mine	800	7	7	150	14—18	9—10	10—14
3.	Hettinger Electric Light & Power Co. Coal Mine	250	6	6	75	12	8	7
4.	Leff Coal Mine*	...	..	..	...	..	..	..
5.	Pearl Butte Coal Mine	250	5	5	100	15	9	16
6.	Minnehaha Coal Mine*	...	..	..	...	..	..	..
7.	Pinkham Coal Mine	35	6	6	200	16	9½	10—15
8.	Reeder Coal Mine**	150	8	6	...	..	..	..
9.	Stephenson & Gunderson Coal Mine ***	...	..	..	...	..	..	..
10.	Williamson Coal Mine	200	6	6	200	12	10	8
	BILLINGS COUNTY							
11.	De Mores Coal Mine	200	7	5	140	18	5½	40—50
12.	High Grade Coal Mine	600	6	6	150	18—20	6—7	18
13.	Red Trail Coal Mine	200	6	5	150	16	5	10
	BOWMAN COUNTY							
14.	Bowman Coal Mine	250	10	6	100	18—30	15	15
15.	Johnson Fuel Co. Coal Mine	500	8	7	100—200	16—18	7	5
	BURKE COUNTY							
16.	Bonsness Coal Mine*	...	..	..	...	..	..	..
17.	Domrese Coal Mine*	...	..	..	...	..	..	..
18.	Fenster Coal Mine	75	7	7	75	14	7	10
19.	Hagen Coal Mine*	...	..	..	...	..	..	..
20.	Kielhock Coal Mine*	...	..	..	...	..	..	..
21.	Makee Coal Mine	worked out	6	6	worked out	12	6	..
22.	Meade & Sims Coal Mine*	...	..	..	...	..	..	..
23.	Souther Coal Mine	300	7	7	100	16	7	6—8
24.	Sunlight Coal Mine*	...	..	..	...	..	..	..
25.	Zimdars & Hall Coal Mine	100	7	7	100	14	6	..
	BURLEIGH COUNTY							
26.	Asplund Coal Mine	500	7	7	225	19	8	8—10
27.	Backman Coal Mine	150	7	7	90	19	8	6—8

*Strip pit.
**No rooms turned
***Slope being driven
†Information not furnished

	BURLEIGH COUNTY—(Continued)							
28.	Berger Coal Mine	40	7	6	100	20	5½	10
29.	Lauback Coal Mine	100	7	5	120	16	4	14
30.	Lind Coal Mine	450	11	7	175	19	8	10—12
31.	Peterson Coal Mine	800	8	7	150	16	7	8—12
32.	Wilton Coal Mine	4,572	10	8	200	14	9	22
	DIVIDE COUNTY							
33.	Dougherty Coal Mine	240	6	6½	120	14—16	6½	6
34.	Hought Coal Mine	1,500	7	6	120	14	6½—7	6—10
35.	Lorbeski Coal Mine	1,000	7	7	150—200	14	7	8—10
36.	Mathieson Coal Mine†	40	..	..	...	..	..	..
37.	Truax Coal Mine	600	6	6	100	14	6½—7	8
	DUNN COUNTY							
38.	Armbernst Coal Mine*	...	..	..	...	..	..	..
39.	Bang Coal Mine*	...	..	..	...	..	..	..
40.	Blecha Coal Mine*	...	..	..	...	..	..	..
41.	Chase Coal Mine*	...	..	..	...	..	..	..
42.	Heiser Coal Mine*	...	..	..	...	..	..	..
43.	Hy Grade Coal Mine	250	10	8	150	20	10	..
44.	Paulson Coal Mine	600	9	7	90	24	8	12
45.	Pulver & Logan Coal Mine*	...	..	..	...	..	..	..
46.	Sloan Coal Mine	400	5	6	200	16	6	10
47.	Three Star Coal Mine*	...	..	..	...	..	..	..
	GOLDEN VALLEY COUNTY							
48.	Corliss Caol Mine	No entry	..	..	50	20	9	..
49.	Cusick Coal Mine	70	14	10	50	20	12	15x15
50.	Grimm Coal Mine	100	12	8	50	20	12	15—15
51.	Porter Coal Mine	70	14	9	30—50	18	9	15
52.	Sentinel Butte Coal Mine	200	12	10	50	20	12	15
	GRANT COUNTY							
53.	Black Diamond Coal Mine	200	6	5	150	16	5½	15
54.	Coffin Butte Coal Mine*	...	..	..	...	..	..	..
55.	Lehner Coal Mine*	...	..	..	...	..	..	..
56.	Miller Coal Mine*	...	..	..	...	..	..	..

*Strip pit
†Information not furnished

GRANT COUNTY—(Continued)

No.	Name of Mine	Main Enery			Rooms			
		Length feet	Width fee	Height feet	Length feet	Width feet	Heigth feet	Width of pillar feet
57.	Patzer Coal Mine	180	7	6	75	14	6	..
58.	Rock Coal Mine*	...	..	..	...	..	..	..
59.	Wolford Coal Mine*	...	..	..	...	..	..	..
	HETTINGER COUNTY							
60.	Albrecht Coal Mine*	...	..	..	...	..	..	..
61.	Arnold Coal Mine	500	10	9	60	12	8	..
62.	Billman Coal Mine*	...	..	..	...	..	..	..
63.	Culver Coal Mine*	...	..	..	...	..	..	..
64.	Davis Coal Mine*	...	..	..	...	..	..	..
65.	Havelock Coal Mine	100	6	6	60	16	8	..
66.	Kallis Coal Mine*	...	..	..	...	..	..	..
67.	Kunze Coal Mine	250	10	8	100	16	10	..
68.	Merry Coal Mine*	...	..	..	...	..	..	..
69.	Nelson Coal Mine*	...	..	..	...	..	..	..
70.	Rumph Coal Mine*	...	..	..	...	..	..	..
71.	Sadler Coal Mine	400	8	8	150	16	10	8
72.	Square Deal Coal Mine*	...	..	..	...	..	..	..
73.	Switzer Coal Mine*	...	..	..	...	..	..	..
74.	Utter Coal Mine*	...	..	..	...	..	..	..
	McLEAN COUNTY							
75.	Bitumina Coal Mine	900	8	7	200	18	8	10
76.	Borchardt Coal Mine	400	6	6	150	12	8	6
77.	Elm Point Coal Mine	500	5½	6—7	150	14—16	8	16
78.	Fjeldal Coal Mine	400	6	6	100	14	7	10
79.	Fredrich Coal Mine	550	6	6	85	13	6	7
80.	Garrison Coal Mine	600	8	6	150	14	5½	15
81.	Hanson Coal Mine	400	7	6	135	12	7	10
82.	Johnson Coal Mine	600	6	5	100—200	14—16	6	8—12
83.	Koenig Coal Mine*	...	..	..	...	..	..	..
84.	Pfister Coal Mine	100	7	6	50	12	7	..
85.	Rupp Coal Mine	100	6	6	175	14—18	6	8—12
86.	Seibel Coal Mine*	...	..	..	...	..	..	..
87.	Ulrich Coal Mine	Abandoned						
	MERCER COUNTY							
88.	Beulah Coal Mine	415	7	8	150	16	8	34
89.	Dilger Coal Mine	300	Entry being driven		150	16—18	10	8—12

*Strip pit.

MERCER COUNTY—(Continued)

90.	Gallagher Coal Mine*	...	..	..	...	..	..	..
91.	Golden Valley Coal Mine	150	4	6	50	30	6	..
92.	Haven Coal Mine**	20	6	5	...	..	..	..
93.	Ingold Coal Mine*	...	..	..	...	..	..	..
94.	Keeley Coal Mine	150	5	4	80	14	4	8—10
95.	Kesler Coal Mine	150	10	12	50	20	14	20
96.	Koulberg Coal Mine**	100	4	5	...	..	..	..
97.	Krem Coal Mine	90	7	7	150	16	7	8—10
98.	Lucky Strike Coal Mine	300	5	6	90	16	6	12
99.	Myers Coal Mine**	230	6	5	...	..	..	..
100.	Otness Coal Mine	25	4	5	100	7—8	4—5	8
101.	Reichengberg Coal Mine	350	5	4	90	14	4	10—12
102.	Reigel Coal Mine	50	5	5	40	12	5	..
103.	Standard Coal Mine	Abandoned						
104.	Schmidt Coal Mine	150	14	16	30—40	20	18	15

MORTON COUNTY

105.	Coopenhaver Coal Mine	Not in opr.						
106.	Elmer Coal Mine**	400	5	6	...	..	..	..
107.	Garfield Coal Mine*	...	..	..	...	..	..	..
108.	Harnisch Coal Mine	300	6	6	150—200	16	6	10—12
109.	Haymarch Coal Mine	300	6	6	100	18	7—8	..
110.	Hebron Coal Mine	3,000	6	7	300	20	7	15
111.	Knutson Coal Mine*	...	..	..	...	..	..	..
112.	Kokakaler Coal Mine*	...	..	..	...	..	..	..
113.	Kramer Coal Mine	200	6	6	65	18	6½	8—10
114.	Lange Coal Mine*	...	..	..	...	..	..	..
115.	Lidstrom Coal Mine	200	6	7	100	16—18	9—11	10
116.	New Salem Coal Mine	1,500	8½	5	250	16	5	8
117.	North Star Coal Mine	300	6	6	100	20	7½	15—18
118.	Ormiston Coal Mine	250	5	5	200	15	6	10
119.	Pleasant Ridge Coal Mine	200	6	6	130	17	6	8—10
120.	Ramsland Coal Mine*	...	..	..	...	..	..	..
121.	Wadeson Coal Mine	100	6	6	50	18	6	..

MOUNTRAIL COUNTY

122.	Blake Coal Mine*	...	..	..	...	..	..	..
123.	Everson Coal Mine*	...	..	..	...	..	..	..
124.	Hoppe Coal Mine*	...	..	..	...	..	..	..
125.	Kale Coal Mine*	...	..	..	...	..	..	..

*Strip pit.
**No rooms turned.

MOUNTRAIL COUNTY—(Continued)

No.*	Name of Mine	Main Enery			Rooms			
		Length feet	Width fee	Height feet	Length feet	Width feet	Heigth feet	Width of pillar feet
126.	Porger Coal Mine	300	6	6	50	12	6	..
127.	Rodgers Coal Mine*	...	..	..	...	..	..	..
128.	Sellers Coal Mine*	...	..	..	...	..	..	..
	OLIVER COUNTY							
129.	Barlow Coal Mine*	...	..	..	...	..	..	..
130.	Meyhoff Coal Mine*	...	..	..	...	..	..	..
131.	Pleasant Valley Coal Mine*	...	..	..	...	..	..	..
132.	Spring Valley Coal Mine*	...	..	..	...	..	..	..
133.	Tripp Coal Mine*	...	..	..	...	..	..	..
	RENVILLE COUNTY							
134.	Tehelka Coal Mine	200	5	4½	65	14	3½	10
135.	White Ash Coal Mine	250	4	5	50	12	3½	12
136.	Wooster Coal Mine	300	4	5	40	8—9	3	..
	SLOPE COUNTY							
137.	Krenz Coal Mine *	...	..	..	...	..	..	..
	STARK COUNTY							
138.	Gross Coal Mine	Not opertd						
139.	Hokos & Benek Coal Mine**	90	8	7	...	..	..	..
140.	Lehigh Coal Mine	5,200	12	6	150	20	6½	15
141.	North Creek Coal Mine*	...	..	..	...	..	..	..
142.	North Star Coal Mine	350–400	4	5	250	18—20	5	8—10
143.	Pittsburg Coal Mine	2,000	6	6	100—300	18—20	7—8	16
144.	St. Mary's Coal Mine	400	4	5	150	18—20	5	20—30
145.	Zenith Coal Mine	4,300	8	8	250	18—20	8—9	10
	WARD COUNTY							
146.	Bartoshivich Coal Mine	150	8	6	150	18	8—9	14
147.	Burlington City Coal Mine	2,000	7	7	250	16	7	16
148.	Coflisch Coal Mine	720	7	6	160	14	8	12
149.	Clark Coal Mine	600	7	6	30	16	5	14
150.	Colton Coal Mine	400	7	6	140	16	7	16
151.	Conan Coal Mine	600	6—7	7	100	14	7—8	20
152.	Crosby Coal Mine	250	5	5	10—11	14	5½—6½	..
153.	Davis Coal Mine	2,000	7	6	125—150	14	7	20
154.	Dakota Coal Co. Coal Mine	1,400	7	6	110	14—16	7	14

*Strip pit. **No rooms turned.

WARD COUNTY—(Continued)

155.	Diamond Coal Mine	300	7	4	75	13	4½	30
156.	Farmers' Coal Mine	800	5	5	175—200	8—10	5½	8
157.	Foxholm Coal Mine	900	7	7	125	16	7	16
158.	Hot Blast Coal Mine	Abandoned						
159.	Houston Coal Mine**	150	6	6	...	..	..	..
160.	Hunnewell Coal Mine	600	5½	5½	100	15	6—7	..
161.	Johnson Coal Mine	1,400	6	6	110	17	5½	10
162.	Klondike Coal Mine	150	4½	5	50	12	3½	8—10
163.	Larson Coal Mine	700	7	6	100	16	7	20
164.	Leeson No. 1 Coal Mine	300	8	8	100	15	8	20
165.	Leeson No. 2 Coal Mine	500	8	7	150	15	7—8	15
166.	Lloyd Coal Mine	1,700	6	6	100	14	6	10
167.	Mellon Coal Mine	200	7	5	100	14	5	16
168.	Rich Coal Mine	60	6	6	100	12	5½	..
169.	Seed Coal Mine**	400	7—6	7	...	..	..	..
170.	National Coal Mine	800	7	5½	100	13	5½	17
171.	Square Deal Coal Mine	200	6	5	75	12—14	4	10—12
172.	Superior Coal Mine**	300	6	6	...	..	..	..
173.	Tree-Bausch Coal Mone	100	8	8	70	12	8	..
174.	Vadnais Coal Mine	800	5	5	100—125	14	4	14—16
175.	Wallace Coal Mine	2,600	100	200	100	14	7	20
176.	Wood Coal Mine	400	8	7	100—200	16	7	8—10

WILLIAMS COUNTY

177.	Aanonson Coal Mine	150	7	6	100	14	6	4—5
178.	Black Beauty Coal Mine	400	8	6	100	12—14	6	..
179.	Black Diamond Coal Mine	800	8	6	125	18	7	14
180.	Big Four Coal Mine	400	8	7	80	13	6	14
181.	Brayant Coal Mine	Shaft being sunk						
182.	Bryne Coal Mine	500	8	7	150	14	7	20
183.	East Ellithorpe Coal Mine**	625	7	6	...	..	..	..
184.	Ellithorpe Coal Mine	600–700	8	7	150	16	6½—7½	16
185.	Erkie Coal Mine**	40	4	8	...	..	..	..
186.	Falk Coal Mine	100	7	6	100	12—14	6	6—8
187.	Folvog Coal Mine	500	7	6	150	14	7	16
188.	Freeman Coal Mine	400	8	6	80	15	7	10

**No rooms turned.

†Underground and strip mining. Classified as strip pit.

WILLIAMS COUNTY—(Continued)

No.	Name of Mine	Main Enery			Rooms			
		Length feet	Width fee	Height feet	Length feet	Width feet	Heigth feet	Width of pillar feet
189.	Haugen Coal Mine	73	4½	5½	70	16	6	14
190.	Head Coal Mine	500	6	6	75	14	8	10
191.	Husebye Coal Mine	1,400	7—8	7	150	16	7	14
192.	Johnson Coal Mine	220	6	6	80—130	14—16	7	8
193.	Lein Coal Mine†	...	..	..	...	..	..	..
194.	Lovejoy Coal Mine	785	7	7	150	14	8	14
195.	Miller Coal Mine	330	7	6	100	14	7	12
196.	Moorman Coal Mine	500	7	7	100	16	8	14
197.	Narveson Coal Mine	Entry caved. New entry to be driven.						
198.	Nelson & Anderson Coal Mine	200	4	6	60	12—14	6—7	14
199.	Reclamation Service Coal Mine	2,900	8	7	200	14	7	16
200.	Seabrook Coal Mine	200	6	7	70	10	7	8
201.	Todd Coal Mine	200	8	7	100	16	7	..
202.	Vizina Coal Mine	250	7	6	100	16—25	7	..

†Information not furnished.

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TABLE NO. 5
ADAMS COUNTY

No.	Name of Mine	Kind of Roof feet	Kind of Floor	How Drained	Kind of Timber	Av. Size inches	Approx. Cost at mine
1.	Clermont Coal Mine	4 — 6 coal	clay	Dry	Tamarack	6	.....
2.	Haynes Coal mine	4 — 5 coal	clay	Dry	Pine	6	.75
3.	Hettinger Electric Light & Power Co. Coal Mine	1 coal	clay	Steam pump	Tamarack	6	.40—.50
4.	Leff Coal Mine	.....	clay	Gas driven pump	Fir	6x6	1.50
5.	Pearl Butte Coal Mine	4 — 5 coal	clay	Dry	.....	.....	.....
6.	Minnehaha Coal Mine	.....	clay	Ditch	.....	.....	.....
7.	Pinkham Coal Mine	4 coal	clay	Dry	Tamarack	6	.....
8.	Reeder Coal Mine	1½ coal	clay	Dry	.....	.....	.....
9.	Stephenson & Gunderson Coal Mine	3 coal	clay	Dry	Tamarack	6	.40—.50
10.	Williamson Coal Mine	4 coal	clay	Dry	.....	.....	.....
	BILLINGS COUNTY						
11.	De Mores Coal Mine	1 coal	clay	Dry	Cottonwood	8	.25
12.	High Grade Coal Mine	2½— 3 coal	clay	Dry	Cottonwood	6— 8	.25
13.	Red Trail Coal Mine	2 coal	clay	Dry	Tamarack	6	.....
	BOWMAN COUNTY						
14.	Bowman Coal Mine	10 coal	5 ft. coal	Dry	Pine	6— 8	.75
15.	Johnson Fuel Co. Coal Mine	6 coal	4 ft. coal	Gas driven pump	R. R. Ties	.....	.25
	BURKE COUNTY						
16.	Bonsness Coal Mine	.....	clay	Tank pump	.....	.....	.....
17.	Domrese Coal Mine	.....	clay	Gas driven pump	.....	.....	.....
18.	Fenster Coal Mine	2 coal	clay	Dry	Cedar	6	.35
19.	Hagen Coal Mine	1 coal	clay	Gas driven pump	Cedar	6	.35
20.	Kielhock Coal Mine	.....	clay	Gas driven pump	.....	.....	.....
21.	Makee Coal Mine	clay	clay	Tank pump	Tamarack	6	.25
22.	Meade & Sims Coal Mine	.....	clay	Gas driven pump	.....	.....	.....
23.	Souther Coal Mine	2 coal	clay	Steam driven pump	Cedar	6	.32
24.	Sunlight Coal Mine	.....	clay	Gas driven pump	.....	.....	.....
25.	Zimdars & Hall Coal Mine	2 coal	clay	Gas driven pump	Tamarack	6	.25
	BURLEIGH COUNTY						
26.	Asplund Coal Mine	4 coal	clay	Dry	Cottonwood	8—10	.25
27.	Backman Coal Mine	3 — 4 coal	clay	Gas driven pump	Cottonwood	8—10	.25
28.	Berger Coal Mine	½ coal	clay	Dry	Cottonwood	6— 8	.12½
29.	Laubach Coal Mine	½ coal	clay	Gas driven pump	Cottonwood	6— 8	.8 1-3
30.	Lind Coal Mine	2 coal	clay	Dry	Cottonwood	6— 8	.25
31.	Peterson Coal Mine	1 coal	4 ft. coal	Dry	Cottonwood	6— 8	.25
32.	Wilton Coal Mine	3 coal	clay	Electric pumps	Tamarack	6	.....

DIVIDE COUNTY

33.	Dougherty Coal Mine	½	coal	clay	Dry	Tamarack	6	.22
34.	Hought Coal Mine	½— 1	coal	clay	Gas driven pump	Tamarack	6	.22
35.	Lorbeski Coal Mine	½	coal	clay	Windmill and pump	Tamarack	6	.22
36.	Mathieson Coal Mine		coal	coal	Dry	None		
37.	Truax Coal Mine	½	coal	clay	Electric pumps	Tamarack	6	.22

DUNN COUNTY

38.	Armbernst Coal Mine			clay	Ditch			
39.	Bang Coal Mine			clay	Gas driven pump			
40.	Blecha Coal Mine			clay	Gas driven pump			
41.	Chase Coal Mine			clay	Ditch			
42.	Heiser Coal Mine			clay	Ditch			
43.	Hy Grade Coal Mine	8	coal	2 ft. coal	Steam pump	Cottonwood	6— 8	.20
44.	Paulson Coal Mine	8 —10	coal	clay	Dry	None		
45.	Pulver and Logan Coal Mine			clay	Pump			
46.	Sloan Coal Mine	1	coal	clay	Dry	Pine	4x4	.25
47.	Three Star Coal Mine			clay	Gas driven pump			

GOLDEN VALLEY COUNTY

48.	Corliss Coal Mine	6	coal	coal	Ditch	None		
49.	Cusick Coal Mine	6	coal	coal	Ditch	None		
50.	Grimm Coal Mine	4 — 5	coal	coal	Ditch	None		
51.	Porter Coal Mine	8 —10	coal	coal	Ditch	None		
52.	Sentinel Butte Coal Mine	6	coal	12 ft. coal	Dry	None		

GRANT COUNTY

53.	Black Diamond Coal Mine	2 — 2½	coal	clay	Gas driven pump	Cedar	6	.18
54.	Coffin Butte Coal Mine			clay	Gas driven pump			
55.	Lehner Coal Mine			clay	Gas driven pump			
56.	Miller Coal Mine			clay	Dry			
57.	Patzer Coal Mine		clay	clay	Dry	Cedar	5	.20
58.	Rock Coal Mine			clay	Dry			
59.	Wolford Coal Mine			clay	Pump			

HETTINGER COUNTY

60.	Albrecht Coal Mine			clay	Ditch			
61.	Arnold Coal Mine	5 — 6	coal	clay	Dry	Pine	4x4	
62.	Billman Coal Mine			clay	Pump			
63.	Culver Coal Mine			clay	Dry			
64.	Davis Coal Mine			clay	Dry			
65.	Havelock Coal Mine	3	coal	clay	Dry	Tamarack	5	

HETTINGER COUNTY—(Continued)

No.	Name of Mine	Kind of Roof feet	Kind of Floor	How Drained	Kind of Timber	Av. Size inches	Approx. Cost at mine
66.	Kallis Coal Mine	Hard clay	clay	Ditch	None		
67.	Kunze Coal Mine	4 coal	clay	Gas driven pump	Pine	4x4	
68.	Merry Coal Mine		clay	Ditch			
69.	Nelson Coal Mine		clay	Gas driven pump			
70.	Rumph Coal Mine		clay	Gas driven pump			
71.	Sadler Coal Mine	1 coal	clay	Dry	Pine	4x4	
72.	Square Deal Coal Mine		clay	Ditch			
73.	Switzer Coal Mine		clay	Almost Dry			
74.	Utter Coal Mine		clay	Ditch			
	McLEAN COUNTY						
75.	Bitumina Coal Mine	3 coal	clay	Steam pump	Cottonwood	6 —8	.25
76.	Borchardt Coal Mine	4 coal	clay	Dry	Cedar	6	.20
77.	Elm Point Coal Mine	clay	clay	Elm	Elm	6— 8	.12½—.15
78.	Fjelddal Coal Mine	3 — 4 coal	clay	Dry	Cedar	5	.20
79.	Fredrich Coal Mine	clay	clay	Dry	Cedar	6	.20
80.	Garrison Coal Mine	1½ coal	clay	Electric pump	Tamarack	6	.22
81.	Hanson Coal Mine	3 — 4 coal	clay	Dry	Cedar	5	.20
82.	Johnson Coal Mine	2-3 coal	clay	Windmill & pump	Cedar	6	.22
83.	Koenig Coal Mine		clay	Sewer drain			
84.	Pfister Coal Mine	1 coal	clay	Ditch	Cottonwood	6	.25
85.	Rupp Coal Mine	2-3 coal	clay	Dry	Cedar	6	.20
86.	Seibel Coal Mine		clay	Dry			
87.	Ulrich Coal Mine	Abandoned					
	MERCER COUNTY						
88.	Beulah Coal Mine	2 — 3 coal	clay	Steam and Electric pumps	Tamarack	6	.22
89.	Dilger Coal Mine	6 coal	clay	Ditch	None		
90.	Gallagher Coal Mine		clay	Gas driven pump			
91.	Golden Valley Coal Mine	Sandy clay	clay	Box drain	Cedar	6	.20
92.	Haven Coal Mine	clay	clay	Dry	None		
93.	Ingold Coal Mine	clay	clay	Ditch			
94.	Keeley Coal Mine	clay	clay	Dry	Cottonwood	8	.15
95.	Kesler Coal Mine	4 coal	clay	Dry	None		
96.	Koulberg Coal Mine	clay	clay	Well pump	None		
97.	Krem Coal Mine	6 coal	clay	Gas driven pump	None		
98.	Lucky Strike Coal Mine	1½ coal	clay	Dry	Pine	4x6	.80
99.	Myers Coal Mine	1 Blackjack	clay	Box drain	Pine	4x4	.25
100.	Otness Coal Mine	clay	clay	Pipe	Cedar		.20

MERCER COUNTY—(Continued)

101.	Reichengberg Coal Mine	clay...	clay.....	Dry	Cottonwood.....	8	.15
102.	Reigel Coal Mine	clay...	clay.....	Dry	Cottonwood.....	8	.15
103.	Standard Coal Mine	Abandoned	.....	.....	.....	.....	.....
104.	Schmidt Coal Mine	5 coal...	clay.....	Windmill and pump....	None	.....	.....

MORTON COUNTY

105.	Coopenhaver Coal Mine.	Not operated...	.....				
106.	Eliner Coal Mine	clay...	clay.....	Almost dry	Tamarack	6— 9	.35
107.	Garfield Coal Mine	.....	clay.....	Gas driven pump	.....	.....	.....
108.	Harnisch Coal Mine	1 clay...	10 in. clay....	.....	.....	.....	.....
		2 coal...	2 ft. coal	Dry	Tamarack	6	.20
109.	Haymarsh Coal Mine	1½— 2 coal...	clay.....	Dry	Tamarack	6	.35
110.	Hebron Coal Mine	1 coal...	clay.....	Ditch	Tamarack	6— 8	.18
111.	Knutson Coal Mine	.....	clay.....	Ditch	.....	.....	.....
112.	Kokakaler Coal Mine ...	.....	clay.....	.....	.....	.....	.....
113.	Kramer Coal Mine	½ coal...	clay.....	Dry	R. R. Ties.....	.....	.25
114.	Lange Coal Mine	.....	clay.....	Gas driven pump	.....	.....	.....
115.	Lidstrom Coal Mine	1 Hard shale...	clay.....	Pipe	Very few.....	.....	.....
116.	New Salem Coal Mine..	clay...	clay.....	Dry	Tamarack	5— 6	.18
117.	North Star Coal Mine...	clay...	clay.....	Dry	Tamarack	6	.35
118.	Ormiston Coal Mine	1 coal...	clay.....	Ditch	Cottonwood.....	5	.....
119.	Pleasant Ridge Coal Mine	clay...	clay.....	Dry	Tamarack	6	.17
120.	Ramsland Coal Mine ...	.....	clay.....	Ditch	.....	.....	.....
121.	Wadeson Coal Mine	clay...	clay.....	Gas driven pump	Tamarack	6	.25

MOUNTRAIL COUNTY

122.	Blake Coal Mine	.....	clay.....	Dry	.....	.....	.....
123.	Everson Coal Mine	.....	clay.....	Ditch	.....	.....	.....
124.	Hoppe Coal Mine	.....	clay.....	Ditch	.....	.....	.....
125.	Kale Coal Mine	.....	clay.....	Ditch	.....	.....	.....
126.	Porger Coal Mine	clay...	clay.....	Dry	Cottonwood.....	8	.15
127.	Rodgers Coal Mine	.....	clay.....	Ditch	.....	.....	.....
128.	Sellers Coal Mine	.....	clay.....	Ditch	.....	.....	.....

OLIVER COUNTY

129.	Barlow Coal Mine	.....	clay.....	Ditch	.....	.....	.....
130.	Meyhoff Coal Mine	.....	clay.....	Ditch	.....	.....	.....
131.	Pleasant Valley Coal Mine	.....	clay.....	Ditch	.....	.....	.....
132.	Spring Valley Coal Mine	.....	clay.....	Ditch	.....	.....	.....
133.	Tripp Coal Mine	.....	clay.....	Ditch	.....	.....	.....

RENVILLE COUNTY

No.	Name of Mine	Kind of Roof feet		Kind of Floor	How Drained	Kind of Timber	Av. Size inches	Approx. Cost at mine
134.	Tehelka Coal Mine		clay...	clay.....	Dry	Cedar	5	.11
135.	White Ash Coal Mine		clay...	clay.....	Dry	Cedar	5	.11
136.	Wooster Coal Mine		clay...	clay.....	Dry	Cedar	6	.11

SLOPE COUNTY

137.	Krenz Coal Mine			clay.....	Pumps			

STARK COUNTY

138.	Gross Coal Mine	2½	coal...	clay.....	Dry	R. R. Ties		
139.	Hokos & Benek Coal Mine	5½	coal...	clay.....	Steam pump			
140.	Lehigh Coal Mine	5	coal...	clay.....	Dry	Tamarack	6	.18
141.	North Creek Coal Mine			clay.....	Ditch			
142.	North Star Coal Mine		clay...	clay.....	Dry	Tamarack	6	.18
143.	Pittsburg Coal Mine	3	coal...	clay.....	Steam pump	Tamarack	6	.18
144.	St. Mary's Coal Mine		clay...	clay.....	Hand pump	Tamarack	6	.25
145.	Zenith Coal Mine	7 — 8	coal...	clay.....	Steam pump	Tamarack	6	.18

WARD COUNTY

146.	Bartoshivich Coal Mine.	6 — 7	coal...	clay.....	Ditch	Tamarack	6	.50 —.75
147.	Burlington City Coal Mine	3	coal...	clay.....	Dry	Tamarack	6	.23
148.	Coflisch Coal Mine	4	coal...	clay.....	Ditch	None		
149.	Clark Coal Mine		clay...	clay.....	Steam pump	Tamarack	6	.25
150.	Colton Coal Mine	3	coal...	clay.....	Gas driven pump	Tamarack	6— 8	.25
151.	Conan Coal Mine	3	coal...	clay.....	Tank car	Tamarack	6— 8	.25
152.	Crosby Coal Mine	Sandy	clay...	clay.....	Box drain	Tamarack	6	.25
153.	Davis Coal Mine	2	coal...	clay.....	Steam pump	Tamarack	6— 8	.21
154.	Dakota Coal Co. Coal Mine	2	coal...	clay.....	Electric pump	Tamarack	6— 8	.25
155.	Diamond Coal Mine	½	coal...	clay.....	Dry	Tamarack	6	.25
156.	Farmers' Coal Mine		clay...	clay.....	Tank pump & siphon	Cedar	6	.25
157.	Foxholm Coal Mine	2 — 3	coal...	clay.....	Gas driven pump	Tamarack	6	.25
158.	Hot Blast Coal Mine		clay...	clay.....	Gas driven pump	Tamarack	6	.25
159.	Houston Coal Mine	2 — 3	coal...	clay.....	Dry	Tamarack	6	.25
160.	Hunnewell Coal Mine	3	coal...	clay.....	Tank pump & siphon	Tamarack	6— 8	.22
161.	Johnson Coal Mine		clay...	clay.....	Dry	Tamarack	6	.21
162.	Klondike Coal Mine		clay...	clay.....	Tank car	Cedar	6	.06
163.	Larson Coal Mine	2	coal...	clay.....	Dry	Tamarack	6	.25
164.	Leeson No. 1 Coal Mine.	3 — 4	coal...	1 ft. clay				
165.	Leeson No. 2 Coal Mine	6 — 7	coal...	4 ft. coal	Gas driven pump	R. R. Ties		
166.	Lloyd Coal Mine	3	coal...	clay.....	Ditch	None		
167.	Mellon Coal Mine		clay...	clay.....	Gas driven pump	Tamarack	6— 8	.18
				clay.....	Dry	Tamarack	6	.25

WARD COUNTY—(Continued)

168.	Rich Coal Mine	Sandy	clay	clay	Steam pump	Tamarack	6	.21
169.	Seed Coal Mine	3	coal	clay	Dry	Elm & Tamarack	6	.25
170.	National Coal Mine		clay	clay	Dry	Tamarack	6	.18
171.	Square Deal Coal Mine		clay	clay	Dry	Cedar	6	.15
172.	Superior Coal Mine	3	coal	clay	Gas driven pump	None		
173.	Tree-Bausch Coal Mine	5 — 6	coal	clay	Ditch	Pine	4x4	
174.	Vadnais Coal Mine		clay	clay	Dry	Tamarack	6	.20
175.	Wallace Coal Mine	2	coal	clay	Gas driven pump	Tamarack	6— 8	.17
176.	Wood Coal Mine	3	coal	clay	Gas driven pump	Cedar	6	.25—.40

WILLIAMS COUNTY

177.	Aanonson Coal Mine	1	coal	clay	Ditch	Cedar	5— 6	.45
178.	Black Beauty Coal Mine	1	coal	clay	Dry	Pine	4x6	.40—.50
179.	Black Diamond Coal Mine	2	coal	clay	Dry	Cottonwood	6—10	.25
180.	Big Four Coal Mine	1	coal	clay	Dry	Cottonwood & Elm	6 —8	.30
181.	Bryant Coal Mine	2	coal	clay	Gas driven pump	None		
182.	Bryne Coal Mine	2 — 3	coal	clay	Dry	Cottonwood & Elm	6—12	.30
183.	East Ellithorpe Coal Mine	2	coal	clay	Dry	Cottonwood	6	.25
184.	Ellithorpe Coal Mine	3 — 4	coal	clay	Hand pump & siphon	Cottonwood & Tamarack	6— 8	.25
185.	Erkie Coal Mine	1	coal	clay	Ditch			
186.	Falk Coal Mine	1 — 2	coal	clay	Gas driven pump	Pine	4x6	.60
187.	Folvog Coal Mine	3	coal	clay	Dry	Cottonwood & Elm	6— 8	.30
188.	Freeman Coal Mine	1	coal	clay	Dry	Cottonwood	6	.30
189.	Haugen Coal Mine	1	coal	clay	Box drain	Tamarack	6	.30
190.	Head Coal Mine	3 — 4	coal	clay	Siphon	Cottonwood	6	.30
191.	Husebye Coal Mine	3	coal	clay	Dry	Cottonwood	6	.25
192.	Johnson Coal Mine	1	coal	clay	Ditch	Cedar	6	.45—.48
193.	Lein Coal Mine	1	coal	clay	Dry	Cedar	6	.25
194.	Lovejoy Coal Mine	2	coal	clay	Hand pump	R. R. Ties	6	.25
195.	Miller Coal Mine	2	coal	clay	Ditch	Tamarack	6	.23
196.	Moorman Coal Mine	5	coal	clay	Dry	Elm & Cottonwood	6— 8	.25
197.	Narveson Coal Mine	1½— 2	coal	clay	Dry	Elm	6— 8	.30
198.	Nelson & Anderson Coal Mine	1 — 2	coal	clay	Dry	Tamarack	6	.25—.31
199.	Reclamation Service Coal Mine	3½	coal	clay	Tank car	Tamarack	6	.32
200.	Seabrook Coal Mine		clay	clay	Ditch			
201.	Todd Coal Mine	2	coal	clay	Hand pump	Cottonwood	6— 8	.25
202.	Vizina Coal Mine	4	coal	clay	Dry	Cottonwood	6— 8	.25

TABLE NO. 6

No.	Name of Mine.	Kind of tract	No. of mine cars	Cap. of mine cars lbs.	Explosive Used	Means of Ignition	Distance from Shipping Station	Railroad
	ADAMS COUNTY							
1.	Clermont Coal Mine	12 lb. Steel.....	10	2,000	FFF	Fuse	2 mi. Haynes	C. M. & St. P.
2.	Haynes Coal Mine.....	12 lb. steel.....	20	3,000	FFF & caps	Fuse	3 mi. Haynes	C. M. & St. P.
3.	Hettinger Electric Light & Power Co. Coal Mine...	Steel	1	1,400	FFF	Fuse	5¼ mi. Hettinger	C. M. & St. P.
4.	Leff Coal Mine.....	None	None..	.....	FFF	Fuse	2 mi. Reeder	N. P.
5.	Pearl Butte Coal Mine....	Steel	3	1,600	FFF	Fuse	11½ mi. Haynes	C. M. & St. P.
6.	Minnehaha Coal Mine	None	None..	.....	FFF	Fuse	2 mi. Reeder	C. M. & St. P.
7.	Pinkham Coal Mine.....	Steel	2	2,000	FFF	Electric fuse	9 mi. Haynes	C. M. & St. P.
8.	Reeder Coal Mine	2x4 wood	2	2,000	FFF	Fuse	¾ mi. Reeder	C. M. & St. P.
9.	Stephenson & Gunderson Coal Mine	12 lb. steel.....	6	2,000	FFF	Fuse	3 mi. Haynes	C. M. & St. P.
10.	Williamson Coal Mine	Steel	3	1,800	FFF	Fuse	2 mi. Haynes	C. M. & St. P.
	BILLINGS COUNTY							
11.	De Mores Coal Mine.....	12-16 lb. steel..	1	2,000	FFF	Fuse	½ mi. Medora	N. P.
12.	High Grade Coal Mine....	18-20-30 lb. steel	21	.....	FFF	Fuse	Medora on Spur	N. P.
13.	Red Trail Coal Mine.....	Steel	12	2,000	FFF and 40% Dyn.	Fuse and fuse and caps	Medora on Spur	N. P.
	BOWMAN COUNTY							
14.	Bowman Coal Mine.....	10 lb. steel.....	4	2,000	FFF	Fuse	5 mi. Bowman	C. M. & St. P.
15.	Johnson Fuel Co. Coal Mine	Steel	15	3,000	FFF 30% Dyn.	Fuse and fuse and caps	Scranton on Spur	C. M. & St. P.
	BURKE COUNTY							
16.	Bonsness Coal Mine.....	None	None..	.....	.....	.....	3½ mi. Stampede	G. N.
17.	Domrese Coal Mine.....	None	None..	.....	FFF	Fuse	5 mi. Columbus on Spur	Soo & G. N.
18.	Fenster Coal Mine.....	Steel	6	1,000	FFF	Fuse	4½ mi. Larson & 2½ mi. Atwood	Soo & G. N.
19.	Hagen Coal Mine.....	None	None..	.....	FFF	Fuse	4 mi. Atcool	Soo
20.	Kielhock Coal Mine.....	12 lb. steel.....	None..	.....	FFF	Fuse	4½ mi. Columbus and 3½ mi. Rincade	Soo & G. N.
21.	Makee Coal Mine.....	2x4 in. pine....	3	1,000	FFF	Fuse	7 mi. Columbus	Soo
22	Meade & Sims Coal Mine..	None	None..	.....	FFF	Fuse	4½ mi. Columbus	Soo & G. N.
23.	Souther Coal Mine.....	Steel	17	1,000	FFF	Fuse	4 mi. Larson	G. N.
24.	Sunlight Coal Mine.....	None	None..	.....	FFF	Fuse	4½ mi. Columbus and 3½ mi. Stampede	Soo & G. N.
25.	Zimdars & Hall Coal Mine.	Steel	13	1,500	None Used	.....	5 mi. Lignite	G. N.

BURLEIGH COUNTY

26.	Asplund Coal Mine	8 lb. steel	4	1,000	FFF	Fuse	4 mi. Still	N. P. & Soo
27.	Backman Coal Mine	8 & 12 lb. steel.	4	1,000	FFF	Fuse and caps	3½ mi. Wilton	N. P. & Soo
28.	Berger Coal Mine	2x4 pine	3	1,000	FFF	Fuse	7 mi. Baldwin	Soo
29.	Laubach Coal Mine	2x4 pine	3	1,000	FFF & FF	Fuse	4½ mi. Wilton	N. P. & Soo
30.	Lind Coal Mine	12 lb. steel	6	1,000	FFF	Fuse	2½ mi. Wilton	N. P. & Soo
31.	Peterson Coal Mine	12–16 lb. steel	6	1,000	FFF	Fuse	4 mi. tSill	N. P.
32.	Wilton Coal Mine	20–35 lb. steel	307	4,000	Dyn. 25%	Electric fuse	2 mi. Wilton on Spur	N. P. & Soo

DIVIDE COUNTY

33.	Dougherty Coal Mine	12 lb. steel	19	1,000	FFF	Squibs	1 mi. Noonan	G. N.
34.	Hought Coal Mine	12 lb. steel	75	1,000	FFF	Squibs	1 mi. Noonan	G. N.
35.	Lorbeski Coal Mine	Steel	19	1,000	FFF	Squibs	1 mi. Noonan	G. N.
36.	Mathieson Coal Mine	2x4 pine	1	1,000	30% and 40% Dynamite	Fuse and cap	7 mi. Alkabo	Soo
37.	Truax Coal Mine	12 lb. steel	80	1,000–1,500	FFF	Squibs	Noonan on Spur	G. N.

DUNN COUNTY

38.	Armbernst Coal Mine	None	None	.....	FFF	.....	16 mi. Killdeer	N. P.
39.	Bang Coal Mine	None	None	.....	.....	.....	½ mi. Dunn Center	N. P.
40.	Blecha Coal Mine	None	None	.....	40% Dyn.	Fuse and cap	11½ mi. Killdeer	N. P.
41.	Chase Coal Mine	None	None	.....	.....	.....	8 mi. Dunn Center	N. P.
42.	Heiser Coal Mine	None	None	.....	40% Dyn.	Fuse and cap	2½ mi. Dickinson	N. P.
43.	Hy Grade Coal Mine	Steel	6	1,000	30% and 40% Dynamite	Cap and fuse	2 mi. Dunn Center	N. P.
44.	Paulson Coal Mine	None	4sledges	500	40% Dyn.	Fuse and cap	3¾ mi. Werner	N. P.
45.	Pulver & Logan Coal Mine	None	None	.....	Dynamite	Fuse and cap	1 mi. Werner	N. P.
46.	Sloan Coal Mine	2x4 pine	2	1,000	30% Dyn.	Cap and fuse	½ mi. Dodge	N. P.
47.	Three Star Coal Mine	None	None	.....	Dynamite	Cap and fuse	10 mi. Dunn Center	N. P.

GOLDEN VALLEY COUNTY

48.	Corliss Coal Mine	Wood	1	1,000	FFF	Fuse	9 mi. Sentinel Butte	N. P.
49.	Cusick Coal Mine	None	None	.....	FFF	Fuse	5 mi. Sentinel Butte	N. P.
50.	Grimm Coal Mine	None	None	.....	FFF	Fuse	4½ mi. Sentinel Butte	N. P.
51.	Porter Coal Mine	None	None	.....	FFF	Fuse	9 mi. Sentinel Butte	N. P.
52.	Sentinel Butte Coal Mine	None	None	.....	FFF	Fuse	3½ mi. Sentinel Butte	N. P.

GRANT COUNTY

No.	Name of Mine.	Kind of tract	No. of mine cars	Cap. of mine cars lbs.	Explosive Used	Means of Ignition	Distance from Shipping Station	Railroad
53.	Black Diamond Coal Mine.	Steel	7	1,000	40% Dyn. & FF	Fuse and cap	2½ mi. Leith	C. M. & St. P.
54.	Coffin Butte Coal Mine....	None	None..	.....	.....	.....	16 mi. Elgin	N. P.
55.	Lehner Coal Mine.....	None	None..	.....	40% Dyn.	.....	4½ mi. Leith	C. M. & .St P.
56.	Miller Coal Mine.....	None	None..	.....	40% Dyn.	Fuse and cap	3 mi. New Leipzig	C. M. & St. P. & N. P.
57.	Patzer Coal Mine.....	2x4 & 2x2 pine..	7	1,200	FFF	Fuse	2½ mi. New Leipzig	C. M. & St. P. & N. P.
58.	Rock Coal Mine.....	None	None..	.....	40% Dyn.	Fuse and cap	3 mi. Heil & 4 mi. Leith	C. M. & St. P.
59.	Wolford Coal Mine.....	None	None..	.....	.....	.....	4 mi. Elgin	N. P.
	HETTINGER COUNTY							
60.	Albrecht Coal Mine.....	None	None..	.....	.....	.....	6 mi. Havelock	C. M. & St. P.
61.	Arnold Coal Mine.....	12 lb. steel.....	2	2,000	40% Dyn.	Fuse and cap	1¾ mi. Regent	C. M. & St. P.
62.	Billman Coal Mine.....	None	None..	.....	.....	.....	4 mi. Regent	C. M. & St. P.
63.	Culver Coal Mine.....	None	None..	.....	FFF	Cap and fuse	9½ mi. New England	C. M. & St. P.
64.	Davis Coal Mine.....	None	None..	.....	40% Dyn.	Cap and fuse	1 mi. Regent	C. M. & St. P.
65.	Havelock Coal Mine.....	Steel	3	2,000	40% Dyn.	Fuse and cap	1 mi. Havelock	C. M. & St. P.
66.	Kallis Coal Mine.....	None	None..	.....	40% Dyn.	Fuse and cap	3 mi. Odessa	N. P.
67.	Kunze Coal Mine.....	Steel	4	2,000	40% Dyn.	Fuse and cap	4½ mi. Havelock	C. M. & St. P.
68.	Merry Coal Mine.....	None	None..	.....	.....	.....	12 mi. Mott	C. M. & St. P. & N. P.
69.	Nelson Coal Mine.....	None	None..	.....	.....	.....	6 mi. Regent	C. M. & St. P.
70.	Rumph Coal Mine.....	None	None..	.....	40% Dyn.	Fuse and cap	6 mi. Mott	C. M. & St. P. & N. P.
71.	Sadler Coal Mine.....	Steel	7 1	3,000 2,000	40% and 30% Dynamite	Fuse and cap	Coalbank on Spur	C. M. & St. P.
72.	Square Deal Coal Mine.....	None	None..	.....	.....	.....	3 mi. Bently	C. M. & St. P.
73.	Switzer Coal Mine.....	None	None..	.....	40% Dyn.	Cap and fuse	2¾ mi. Regent	C. M. & St. P.
74.	Utter Coal Mine.....	None	None..	.....	.....	.....	3½ mi. Odessa	C. M. & St. P.
	McLEAN COUNTY							
75.	Bitumina Coal Mine.....	12 lb. steel.....	12	2,000	Dynamite	Fuse and cap	7 mi. Bitumina	Soo
76.	Borchardt Coal Mine.....	12 lb. steel.....	4	1,000	Dynamite	Cap and fuse	3 mi. Underwood	Soo
77.	Elm Point Coal Mine.....	Steel	6	1,000	30% Dyn.	Cap and fuse	1½ mi. Stanton	N. P.
78.	Fjelddal Coal Mine.....	Steel	4	1,500	Dynamite	Fuse and cap	4½ mi. Underwood	Soo
79.	Fredrich Coal Mine.....	12 lb. steel.....	3	1,000	Dynamite	Fuse and cap	4½ mi. Underwood	Soo
80.	Garrison Coal Mine.....	Steele	33	2,000	30% Dyn.	Cap and fuse	½ mi. Garrison	Soo
81.	Hanson Coal Mine.....	12-16-20 lb. steel	5	1,500	Dynamite	Fuse and cap	4½ mi. Underwood	Soo

McLEAN COUNTY

82.	Johnson Coal Mine	12-16 lb. steel & 2x4 wood	6	1,000	40% Dyn.	Cap and fuse	7 mi. Coleharbor	Soo
83.	Koenig Coal Mine	None	None				3 mi. Underwood	Soo
84.	Pfister Coal Mine	2x4 pine	3	1,000	Dynamite	Cap and fuse	11 mi. Washburn	Soo
85.	Rupp Coal Mine	Steel	4	1,200	30% Dyn.	Cap and fuse	3 mi. Garrison	Soo
86.	Seibel Coal Mine	None	None				3 mi. Garrison	Soo
87.	Ulrich Coal Mine	None	None				5½ mi. Garrison	Soo

MERCER COUNTY

88.	Beulah Coal Mine	Steel	51	2,000	30% and 40% Dynamite	Fuse and cap	¼ mi. Beulah	N. P.
89.	Dilger Coal Mine	Steel	2	2,000	30% and 40% Dyn. & FFF	Fuse and cap	3½ mi. Beulah	N. P.
90.	Gallagher Coal Mine	None	None				1 mi. Hazen	N. P.
91.	Golden Valley Coal Mine	Steel	2	1,000	30% Dyn.	Fuse and cap	2 mi. Golden Valley	N. P.
92.	Haven Coal Mine	2x4 wood	2	1,000	30% Dyn. and FFF	Fuse and cap	3 mi. Golden Valley	N. P.
93.	Ingold Coal Mine	None	None				3 mi. Golden Valley	N. P.
94.	Keeley Coal Mine	Wood	1	1,000	40% Dyn.	Fuse and cap	1 mi Hazen	N. P.
95.	Kesler Coal Mine	Steel	3	2,000	FF F& Dyn.	Fuse and cap	3 mi. Beulah	N. P.
96.	Koulberg Coal Mine	Wood	1	1,000			3 mi. Hazen	N. P.
97.	Krem Coal Mine	12-16 lb. steel & Wood	2	2,000	FFF & 30% Dyn.	Fuse and cap and squibs	6½ mi. Krem	N. P.
98.	Lucky Strike Coal Mine	Steel & 4x4 pine	2	1,000	FFF	Fuse	¾ mi. Zap	N. P.
99.	Myers Coal Mine	2x4 pine	3	1,300	30% Dyn.	Fuse and cap	2 mi. Golden Valley	N. P.
100.	Otness Coal Mine	Steel	2	1,000	40% Dyn.	Fuse and cap	2 mi. Hazen	N. P.
101.	Reichengberg Coal Mine	Wood	4	1,000	40% Dyn.	Fuse and cap	1 mi. Hazen	N. P.
102.	Reigel Coal Mine	2x4 pine	1	1,000	40% Dyn.	Fuse and cap	2½ mi. Golden Valley	N. P.
103.	Standard Coal Mine	None	None				¼ mi. Beulah	N. P.
104.	Schmidt Coal Mine	Steel	2	2,000	40% Dyn. and FFF	Fuse and cap	7½ mi. Beulah	N. P.

MORTON COUNTY

105.	Coopenhaver Coal Mine	None	None				2½ mi. Flasher	N. P.
106.	Elmer Coal Mine	Steel	2	2,000	30% Dyn.	Fuse and cap	3½ mi. Hebron	N. P.
107.	Garfield Coal Mine	None	None				7 mi. New Salem	N. P.
108.	Harnisch Coal Mine	Steel	2	2,000	30% Dyn. and FFF	Fuse and cap	4 mi. Hebron	N. P.
109.	Haymarsh Coal Mine	Steel	1	2,000	30% Dyn. and FFF	Fuse and cap	6½ mi. Haymarsh	N. P.
110.	Hebron Coal Mine	12 lb. steel	10	1,400	FFF	Fuse	5 mi. Hebron	N. P.

MORTON COUNTY—Continued

No.	Name of Mine.	Kind of tract	No. of mine cars	Cap. of mine cars lbs.	Explosive Used	Means of Ignition	Distance from Shipping Station	Railroad
111.	Knutson Coal Mine	None	None		Dynamite	Fuse and cap	4½ mi. Almont	N. P.
112.	Kokakaler Coal Mine	None	None				6 mi. Glen Ullen	N. P.
113.	Kramer Coal Mine	Steel	3	1,600	FFF	Fuse	3 mi. New Salem	N. P.
114.	Lange Coal Mine	None	None				7 mi. Glen Ullen	N. P.
115.	Lindstrom Coal Mine	12 lb. steel	2	2,000	40% Dyn.	Fuse and cap	6 mi. Glen Ullen	N. P.
116.	New Salem Coal Mine	16-20 lb. steel	12	2,000	FFF	Fuse	New Salem on Spur	N. P.
117.	North Star Coal Mine	12 lb. Steel	4	2,000	30% Dyn.	Fuse and cap	5 mi. Hebron	N. P.
118.	Ormiston Coal Mine	12 lb. steel	3	2,000	Dynamite	Fuse and cap	12 mi. Judson	N. P.
119.	Pleasant Ridge Coal Mine	16 20 lb steel	3	2,000	FFF	Fuse	1 mi. Glen Ullen	N. P.
120.	Ramsland Coal Mine	None	None				6 mi. Almont	N. P.
121.	Wadeson Coal Mine	Steel	2	2,000	30% Dyn.	Fuse and cap	6 mi. Hebron	N. P.
	MOUNTRAIL COUNTY							
122.	Blake Coal Mine	None	None				7 mi. Stanley	G. N.
123.	Everson Coal Mine	None	None				4½ mi. White Earth	G. N.
124.	Hoppe Coal Mine	None	None		Dynamite		11 mi. Van Hook	Soo
125.	Kale Coal Mine	None	None		Dynamite	Fuse and cap	7 mi. Stanley	G. N.
126.	Porger Coal Mine	12 lb. Steel	2	1,000	Dynamite	Fuse and cap	3 mi. White Earth	G. N.
127.	Rodgers Coal Mine	None	None				14 mi. Palermo	G. N.
128.	Sellers Coal Mine	None	None				11 mi. Parshall	Soo
	OLIVER COUNTY							
129.	Barlow Coal Mine	None	None		30% and 40% Dynamite	Fuse and cap	4½ mi. Ft. Clark	N. P.
130.	Meyhoff Coal Mine	None	None		FFF	Fuse	20 mi. Judson	N. P.
131.	Pleasant Valley Coal Mine	None	None		40% Dyn.	Fuse and cap	14 mi. Ft. Clark	N. P.
132.	Spring Valley Coal Mine	None	None		FFF	Fuse	14 mi. Judson	N. P.
133.	Tripp Coal Mine	None	None		FFF & 40% Dynamite	Fuse and fuse and cap	12 mi. Ft. Clark	N. P.
	RENVILLE COUNTY							
134.	Tehelka Coal Mine	12 lb. steel	7	1,000	Dynamite	Cap and fuse	3½ mi. Carpio	Soo
135.	White Ash Coal Mine	Gas Pipe	3	1,000			4½ mi. Carpio	Soo
136.	Wooster Coal Mine	Gas Pipe	6	700	Dynamite	Cap and fuse	3 mi. Carpio	Soo
	SLOPE COUNTY							
137.	Krenz Coal Mine	None	None				18 mi. Havelock	C. M. & St. P.
	STARK COUNTY							
138.	Gross Coal Mine	None	None				3 mi. Belfield	N. P.
139.	Hokos & Benek Coal Mine						1 mi. Lehigh	N. P.

STARK COUNTY—Continued

140.	Lehigh Coal Mine.....	25 lb. steel.....	28	4,000	40% Dyn.	Fuse and cap	At Lehigh	N. P.
141.	North Creek Coal Mine....				.....	.....	3 mi. South Heart	N. P.
142.	North Star Coal Mine.....	12 lb. steel.....	4	2,000	30% Dyn.	Fuse and cap	¼ mi. Richardton	N. P.
143.	Pittsburg Coal Mine.....	20 lb. steel.....	None..		FFF	Fuse	Pittsburg on Spur	N. P.
144.	St| Mary's Coal Mine.....	Steel	2	2,000	30% Dyn.	Fuse and cap	1 mi. Richardton	N. P.
145.	Zenith Coal Mine.....	12–18–24 lb. steel	30	2,000	40% Dyn.	Fuse and cap	At Zenith	N. P.

WARD COUNTY

146.	Bartoshivich Coal Mine....	12 lb. steel.....	2	2,500–3,200	40% Dyn.	Fuse and cap	10 mi. Sawyer	Soo
147.	Burlington City Coal Mine.	12–16 lb. steel..	18	3,000	FFF	Fuse	At Burlington	Soo
148.	Coflisch Coal Mine.....	12 lb. steel.....	2	2,000	FFF	Fuse	9 mi. Sawyer	Soo
149.	Clark Coal Mine.....	Steel	9	1,000	FFF	Fuse	2½ mi. Kenmare	Soo
150.	Colton Coal Mine.....	10–16 lb steel..	10	2,000	FFF	Fuse	1½ mi. Burlington	Soo
151.	Conan Coal Mine.....	12–16 lb. steel..	15	2,000	FFF	Fuse	1 mi. Burlington	Soo
152.	Crosby Coal Mine.....	12 lb. steel.....	10	1,000	FFF	Fuse	6 mi. Kenmare	Soo
153.	Davis Coal Mine.....	14 lb. steel.....	46	2,500	FFF	Fuse	1 mi. Kenmare on Spur	Soo
154.	Dakota Coal Co. Coal Mine	Steel	35	2,000	FFF	Fuse	Vanderwalker on Spur	Soo
155.	Diamond Coal Mine.....	12 lb. steel.....	12	1,200	.....	.....	1 mi. Kenmare	Soo
156.	Farmers' Coal Mine.....	2x4 pine.....	8	1,000	.....	.....	7 mi. Bowbells	Soo
157.	Foxholm Coal Mine.....	14 lb. Steel.....	15	2,000	FFF	Fuse	½ mi. Foxholm	Soo
158.	Hot Blast Coal Mine.....	None	None..	.....	.....	.....	3 mi. Donnybrock	Soo
159.	Houston Coal Mine	Steel	1	.....	FFF	Fuse	2 mi. Burlington	Soo
160.	Hunnewell Coal Mine.....	Steel	12	2,000	FFF	Fuse	1½ mi. Burlington	Soo
161.	Johnson Coal Mine.....	2x4 pine	40	1,000	FFF	Fuse and squibs	5 mi. Kenmare	Soo
162	Klondike Coal Mine.....	12 lb. steel.....	4	1,000	.....	.....	5mi. Donnybrook	Soo
163.	Larson Coal Mine.....	Steel	5	2,000	FFF	Fuse	2½ mi. Burlington	Soo
164.	Leeson No. 1 Coal Mine...	None	6	1,000	40% Dyn.	Fuse and cap	11 mi. Velva	Soo
165.	Leeson No. 2 Coal Mine...	12 lb. steel.....	4	2,000	40% Dyn.	Fuse and cap	13 mi. Velva	Soo
166.	Lloyd Coal Mine	16–20 lb. steel..	50	2,000	FFF	Fuse	1 mi. Paradise	Soo
167.	Mellon Coal Mine.....	12 lb. steel.....	6	1,000	.....	.....	2 mi. Kenmare	Soo
168.	Rich Coal Mine.....	12 lb. steel.....	4	1,000	.....	.....	7 mi. Kenmare	Soo
169.	Seed Coal Mine.....	Pine	1	2,000	FFF	Fuse	2 mi. Burlington	Soo
170.	National Coal Mine.....	16–40 lb. steel..	60	2,000	FFF	Fuse	2 mi. Kenmare	Soo
171.	Square Deal Coal Mine.....	12 lb. steel.....	5	1,000	Dynamite	Fuse and cap	3 mi. Baden	Soo
172.	Superior Coal Mine.....	None	None..	.....	.....	.....	Iloyd's Spur	Soo
173.	Tree-Bausch Coal Mine....	None	sledge	.....	Dynamite	Cap and fuse	14 mi. Velva	Soo

WARD COUNTY—Continued

No.	Name of Mine	Kind of tract	No. of mine cars	Cap. of mine cars lbs.	Explosive Used	Means of Ignition	Distance from Shipping Station	Railroad
174.	Vadnais Coal Mine	8–12 lb. steel	11	1,000	FFF	Fuse and squibs	1 mi. Kenmare	Soo
175.	Wallace Coal Mine	12 lb. steel	20	3,000	FFF	Fuse and squibs	At Burlington	Soo
176.	Wood Coal Mine	Steel	4	2,000	30% Dyn.	Cap and fuse	11 mi. Velva	Soo

WILLIAMS COUNTY

No.	Name of Mine	Kind of tract	No. of mine cars	Cap. of mine cars lbs.	Explosive Used	Means of Ignition	Distance from Shipping Station	Railroad
177.	Aanonson Coal Mine	Pine	1	1,000	FFF and 40% Dyn.	Fuse and cap and fuse	4½ mi. Zahl	G. N.
178.	Black Beauty Coal Mine	Steel	17	1,000	FFF	Fuse	1 mi. Hanks	G. N.
179.	Black Diamond Coal Mine	12 lb. steel	12	2,800	FFF	Fuse	3 mi. Miller's Spur	G. N.
180.	Big Four Coal Mine	None	None	.....	.....	.....	24 mi. Williston	G. N.
181.	Bryant Coal Mine	None	None	.....	FFF	Fuse	3¾ mi. Miller's Spur	G. N.
182.	Bryne Coal Mine	12 lb. steel	5	3,600	FFF	Fuse	3 mi. Miller's Spur	G. N.
183.	East Ellithorpe Coal Mine	Wood	3	2,000	FFF	Fuse	2½ mi. Miller's Spur	G. N.
184.	Ellithorpe Coal Mine	12 lb. steel	11	3,000	FFF	Fuse	3 mi. Williston	G. N.
185.	Erkie Coal Mine	None	1	1,000	FFF & 30% & 40% Dyn.	Fuse and cap and fuse	2½ mi. Hanks	G. N.
186.	Falk Coal Mine	10 lb. steel	6	1,000	FFF	Fuse	1½ mi. Hanks	G. N.
187.	Folvog Coal Mine	None	None	.....	.....	.....	1¼ mi. Hanks	G. N.
188.	Freeman Coal Mine	None	None	.....	.....	.....	8 mi. Gladys	.....
189.	Haugen Coal Mine	Steel	2	1,000	FFF & 30% Dynamite	Fuse and cap and fuse	1¼ mi. Hanks	G. N.
190.	Head Coal Mine	None	None	.....	.....	.....	5½ mi. Williston	G. N.
191.	Huscbye Coal Mine	12–20 lb. steel	35	2,800	FFF	Fuse	½ mi. Miller's Spur	G. N.
192.	Johnson Coal Mine	2x4 pine	3	1,000	FFF & 40% Dynamite	Fuse and cap and fuse	4½ mi. Zahl	G. N.
193.	Lein Coal Mine						At Hanks	G. N.
194.	Lovejoy Coal Mine	Steel	8	3,000	FFF	Fuse	½ mi. Avoca	G. N.
195.	Miller Coal Mine	12 lb .steel	2	1,500	FFF	Fuse	12 mi. Williston	G. N.
196	Moorman Coal Mine	None	None	.....	.....	.....	8 mi. Wheelock	G. N.
197.	Narveson Coal Mine	None	None	.....			4 mi. Zahl	G. N.
198.	Nelson & Anderson Coal Mine	Pine	4	1,000	FFF & 30% Dynamite	Fuse and cap and fuse	1 mi. Hanks	G. N.
199.	Reclamation Service Coal Mine	16–30 lb. steel	23	2,800	FFF & 40% Dynamite	Fuse and cap and fuse	4½ mi. Williston	G. N.
200.	Seabrook Coal Mine	None	None	.....	FFF	Fuse	1¼ mi. Hanks	G. N.
201.	Todd Coal Mine	Steel	2	2,500	FFF	Fuse	3 mi. Williston	G. N.
202.	Vizina Coal Mine	2x4 pine	1	3,500	FFF	Fuse	7 mi. Williston	G. N.

TABLE NO. 7

ADAMS COUNTY

No.	Name of Mine	1916 Production	1916 Av. price per ton at mine	1916 Total value	1917 Production	1917 Av. price per ton at mine	1917 Total value
1.	Clermont Coal Mine	$ 4,166	$ 1.40	$ 5,832.40	$ 5,686	$ 2.00	$ 11,373.00
2.	Haynes Coal Mine	8,150	1.75	14,262.50	16,000	2.50	24,000.00
3.	Hettinger Electric Light & Power Co. Coal Mine	2,225	2.50	5,562.50	5,662	2.50	14,155.00
4.	Leff Coal Mine	1,355	2.00	2,711.50	500	2.00	1,000.00
5.	Pearl Butte Coal Mine	.....	.....	.....	1,090	1.70	1,853.00
6.	Minnehaha Coal Mine	.....	.....	.....	270	2.00	540.00
7.	Pinkham Coal Mine	647	1.65	1,067.55	1,683	1.85	3,113.55
8.	Reeder Coal Mine	.....	.....	.....	690	2.50	1,725.00
9.	Stephenson & Gunderson Coal Mine	1,327	1.75	2,322.25	Not in operation		
10.	Williamson Coal Mine	.....	.....	.....	370	1.50	555.00
	Total	17,870		31,758.70	31,951	.....	58,313.55

BILLINGS COUNTY

11.	De Mores Coal Mine	584	1.50	876.00	607	2.00	1,214.00
12.	High Grade Coal Mine	20,515	1.50	1,119.00	22,081	1.65	36,433.65
13.	Red Trail Coal Mine	No report		.....	6,472	2.40	15,532.80
	Total	21,099		1,995.00	29,160	.....	53,180.45

BOWMAN COUNTY

14.	Bowman Coal Mine	3,300	1.65	4,950.00	1,480	1.85	2,738.00
15.	Johnson Fuel Co. Coal Mine	13,744	1.75	25,053.00	12,275	1.85	22,708.75
	Total	17,044		30,003.00	13,755	.....	25,446.75

BURKE COUNTY

16.	Bonsness Coal Mine	.....	.....	.....	311	2.10	653.10
17.	Domrese Coal Mine	No report		.....	845	2.50	2,112.50
18.	Fenster Coal Mine	3,000	1.50	4,500.00	3,000	2.00	6,000.00
19.	Hagen Coal Mine	410	1.15	471.15	.....	.....	.....
20.	Kielhock Coal Mine	8,000	1.60	12,800.00	7,391	1.80	13,303.80
21.	Makee Coal Mine	1,469	1.50	2,203.50	891	1.75	1,559.25
22.	Meade & Sims Coal Mine	.....	.....	.....	1,500	2.50	3,750.00
23.	Souther Coal Mine	5,952	1.50	8,928.00	6,540	2.50	16,350.00
24.	Sunlight Coal Mine	7,400	1.60	11,840.00	5,644	2.50	14,110.00
25.	Zimdars & Hall Coal Mine	No report		.....	600	2.85	1,710.00
	Total	26,231		81,242.65	26,722	.....	59,548.65

BURLEIGH COUNTY

26.	Asplund Coal Mine	2,436	1.75	4,263.00	3,815	1.75	6,675.25
27.	Backman Coal Mine	376	1.75	658.00	810	2.00	1,620.00
28.	Berger Coal Mine	500	1.75	875.00	750	1.75	1,312.50
29.	Laubach Coal Mine	.....	.....	.....	407	2.00	814.00
30.	Lind Coal Mine	2,082	1.75	3,643.50	4,737	1.70	8,052.90
31.	Peterson Coal Mine	1,685	1.75	2,948.75	1,040	2.00	2,080.00
32.	Wilton Coal Mine	219,822	1.38	303,354.36	260,263	1.71	445,049.73
	Total	226,901		315,742.61	271,822		465,605.38

DIVIDE COUNTY

33.	Dougherty Coal Mine	1,168	2.00	2,336.00	11,685	2.60	30,381.00
34.	Hought Coal Mine	18,512	1.65	30,544.80	28,010	2.60	72,826.00
35.	Lorbeski Coal Mine	5,513	1.75	9,647.75	7,554	2.75	20,773.50
36.	Mathieson Coal Mine	No report		.....	150	2.00	300.00
37.	Truax Coal Mine	25,500	2.00	51,000.00	50,282	2.50	125,705.00
	Total	50,693		93,528.55	97,681	.....	149,985.50

DUNN COUNTY

38.	Armbernst Coal Mine	.....	.....	.....	200	2.75	550.00
39.	Bang Coal Mine	399	1.50	598.50	200	1.50	300.00
40.	Blecha Coal Mine	.....	.....	.....	200	1.50	300.00
41.	Chase Coal Mine	.....	.....	.....	200	2.00	400.00

DUNN COUNTY—(Continued)

No.	Name of Mine	1916 Production	1916 Av. price per ton at mine	1916 Total value	1917 Production	1917 Av. price per ton at mine	1917 Total value
42.	Heiser Coal Mine	250	1.50	375.00	250	1.50	375.00
43.	Hy Grade Coal Mine	500	1.75	875.00	1,054	2.00	2,108.00
44.	Paulson Coal Mine	1,280	1.75	2,240.00	1,080	2.00	2,160.00
45.	Pulver & Logan Coal Mine	.....	.....	.....	129	2.25	290.25
46.	Sloan Coal Mine	700	2.00	1,400.00	1,589	2.25	3,575.25
47.	Three Star Coal Mine	.....	.....	.....	425	2.00	950.00
	Total	3,129		5,488.00	5,327	.....	11,008.50

GOLDEN VALLEY COUNTY

No.	Name of Mine	1916 Production	1916 Av. price per ton at mine	1916 Total value	1917 Production	1917 Av. price per ton at mine	1917 Total value
48.	Corliss Coal Mine	No report		.....	400	2.00	800.00
49.	Cusick Coal Mine	200	1.50	300.00	225	2.00	450.00
50.	Grimm Coal Mine	776	1.50	1,164.00	1,168	1.75	2,044.00
51.	Porter Coal Mine	300	1.50	450.00	200	1.75	350.00
52.	Sentinel Butte Coal Mine	No report		.....	450	2.00	900.00
	Total	1,276		1,914.00	2,443	.....	4,544.00

GRANT COUNTY

No.	Name of Mine	1916 Production	1916 Av. price per ton at mine	1916 Total value	1917 Production	1917 Av. price per ton at mine	1917 Total value
53.	Black Diamond Coal Mine	1,520	2.00	3,040.00	2,520	2.00	5,040.00
54.	Coffin Butte Coal Mine	1,300	1.40	1,820.00	1,975	1.40	2,765.00
55.	Lehner Coal Mine	.....	.....	.....	600	1.75	750.00
56.	Miller Coal Mine	800	1.75	1,400.00	800	2.00	1,600.00
57.	Patzer Coal Mine	.....	.....	.....	470	1.75	822.50
58.	Rock Coal Mine	450	1.50	675.00	.....	.....	.....
59.	Wolford Coal Mine	500	1.75	875.00	500	2.00	1,000.00
	Total	4,570		7,810.00	6,865	.....	11,977.50

HETTINGER COUNTY

60.	Albrecht Coal Mine	No report		.....	1,786	2.50	4,465.00
61.	Arnold Coal Mine	2,082	1.25	2,602.50	1,200	1.50	1,800.00
62.	Billman Coal Mine	.....	.....	.....	100	1.50	150.00
63.	Culver Coal Mine	1,065	2.00	1,130.00	541	2.00	1,082.00
64.	Davis Coal Mine	500	2.00	1,000.00	500	2.00	1,000.00
65.	Havelock Coal Mine	285	1.50	427.50	1,600	1.50	2,400.00
66.	Kallis Coal Mine	1,000	1.50	1,500.00	485	1.65	800.25
67.	Kunze Coal Mine	.....	.....	.....	600	2.00	1,200.00
68.	Merry Coal Mine	1,150	1.50	1,725.00	1,040	1.50	1,560.00
69.	Nelson Coal Mine	450	1.35	607.50	450	1.25	562.50
70.	Rumph Coal Mine	700	1.75	1,225.00	1,080	1.85	1,998.00
71.	Sadler Coal Mine	No report		.....	4,500	2.75	12,375.00
72.	Square Deal Coal Mine	2,400	1.40	3,360.00	2,500	1.50	3,750.00
73.	Switzer Coal Mine	.....	.....	.....	800	1.60	1,280.00
74.	Utter Coal Mine	.....	.....	.....	617	1.55	4,056.35
	Total	10,352		13,577.50	17,799	.....	38,497.10

McLEAN COUNTY

75.	Bitumina Coal Mine	7,938	1.60	12,700.80	7,195	1.90	13,670.50
76.	Borchardt Coal Mine	598	1.60	956.80	708	1.60	1,132.80
77.	Elm Point Coal Mine	No report		.....	1,035	1.75	1,811.25
78.	Fjelddal Coal Mine	1,237	1.60	1,979.20	2,323	1.80	4,181.40
79.	Fredrich Coal Mine	598	1.60	956.00	1,466	1.70	2,492.20
80.	Garrison Coal Mine	3,000	1.85	5,550.00	14,145	2.50	35,362.50
81.	Hanson Coal Mine	3,575	1.60	5,720.00	4,300	1.80	7,740.00
82.	Johnson Coal Mine	511	1.50	766.50	1,196	1.80	2,152.80
83.	Koenig Coal Mine	.....	.....	.....	160	1.50	240.00
84.	Pfister Coal Mine	900	1.50	1,350.00	900	1.50	1,350.00
85.	Rupp Coal Mine	No report		.....	2,000	1.75	3,500.00
86.	Seibel Coal Mine	.....	.....	.....	2,900	1.50	4,350.00
87.	Ulrich Coal Mine	955	1.60	1,528.00	.....	.....	.....
	Total	19,312		31,508.10	38,328	.....	77,983.45

MERCER COUNTY

88.	Beulah Coal Mine	.....	.....	.....	3,783	2.25	8,511.75
89.	Dilger Coal Mine	500	1.50	750.00	1,440	1.60	2,304.00
90.	Gallagher Coal Mine	No report		.....	265	2.00	530.00
91.	Golden Valley Coal Mine	No report		.....	90	2.00	180.00

MERCER COUNTY—Continued

No.	Name of Mine	1916 Production	1916 Av. price per ton at mine	1916 Total value	1917 Production	1917 Av. price per ton at mine	1917 Total value
92.	Haven Coal Mine	.....	.....	.....	150	2.00	300.00
93.	Ingold Coal Mine	300	1.80	540.00	600	2.00	1,200.00
94.	Keeley Coal Mine	No report		.....	200	2.00	400.00
95.	Kesler Coal Mine	No report		.....	1,054	1.75	1,844.50
96.	Koulberg Coal Mine	.....	.....	.....	Development work only		.....
97.	Krem Coal Mine	535	2.00	1,070.00	1,536	2.00	3,072.00
98.	Lucky Strike Coal Mine	.....	.....	.....	1,500	1.75	2,625.00
99.	Myers Coal Mine	.....	.....	.....	400	2.00	800.00
100.	Otness Coal Mine	.....	.....	.....	300	2.00	600.00
101.	Reichengberg Coal Mine	1,418	2.00	2,836.00	2,754	2.00	5,508.00
102.	Reigel Coal Mine	.....	.....	.....	Development work only		.....
103.	Standard Coal Mine	9,019	1.75	15,783.25	959	1.75	1,678.25
104.	Schmidt Coal Mine	1,015	1.50	1,522.50	270	1.75	472.50
	Total	12,787		22,501.75	15,301	.....	30,026.00

MORTON COUNTY

No.	Name of Mine	1916 Production	1916 Av. price per ton at mine	1916 Total value	1917 Production	1917 Av. price per ton at mine	1917 Total value
105.	Coopenhaver Coal Mine	1,115	2.00	2,230.00	Not in operation		.....
106.	Elmer Coal Mine	.....	.....	.....	500	1.50	750.00
107.	Garfield Coal Mine	1,341	1.40	1,877.40	570	1.70	969.00
108.	Harnisch Coal Mine	.....	.....	.....	3,332	1.75	5,831.00
109.	Haymarsh Coal Mine	150	1.50	225.00	450	1.50	675.00
110.	Hebron Coal Mine	18,695	1.00	18,695.00	19,266	1.00	*19,266.00
111.	Knutson Coal Mine	250	2.25	562.50	1,410	1.25	1,762.50
112.	Kokakaler Coal Mine	.....	.....	.....	150	**.50	75.00
113.	Kramer Coal Mine	450	1.80	810.00	4,000	1.80	7,200.00
114.	Lange Coal Mine	350	1.75	612.50	400	2.00	800.00
115.	Lidstrom Coal Mine	676	1.60	1,081.60	656	1.90	1,246.40
116.	New Salem Coal Mine	6,058	2.00	12,116.00	6,393	2.25	14,384.25
117.	North Star Coal Mine	3,800	1.50	5,700.00	2,486	1.50	3,729.00
118.	Ormiston Coal Mine	250	1.75	437.50	250	2.00	500.00
119.	Pleasant Ridge Coal Mine	2,481	1.75	4,341.75	1,994	2.25	4,486.50
120.	Ramsland Coal Mine	1,000	1.20	1,320.00	900	1.00	900.00
121.	Wadeson Coal Mine	60	1.25	75.00	237	1.40	331.80
	Total	36,776		50,083.75	42,994	.....	62,906.45

*Coal not for sale. Output used at brickyard.
**Farmers do their own digging.

MOUNTRAIL COUNTY

122.	Blake Coal Mine	.....	.....	.....	60	1.50	90.00
123.	Everson Coal Mine	No report		.....	185	1.75	323.75
124.	Hoppe Coal Mine	970	2.00	1,940.00	1,030	2.00	2,060.00
125.	Kale Coal Mine	300	1.50	450.00	300	1.50	450.00
126.	Porger Coal Mine	540	2.00	1,080.00	265	2.00	530.00
127.	Rodgers Coal Mine	600	2.00	1,200.00	200	2.00	400.00
128.	Sellers Coal Mine	500	1.00	500.00	2,000	1.00	2,000.00
	Total	2,910		5,170.00	4,040	.....	5,853.75

OLIVER COUNTY

129.	Barlow Coal Mine	250	1.35	337.50	650	1.60	1,040.00
130.	Meyhoff Coal Mine	2,500	1.50	3,750.00	150	1.50	225.00
131.	Pleasant Valley Coal Mine	1,600	1.25	2,000.00	1,900	1.50	2,850.00
132.	Spring Valley Coal Mine	380	1.25	475.00	1,000	1.50	1,500.00
133.	Tripp Coal Mine	440	1.25	550.00	650	1.35	877.50
	Total	5,170		7,112.50	4,350	.....	6,492.50

RENVILLE COUNTY

134.	Tehelka Coal Mine	215	2.50	537.50	200	2.50	500.00
135.	White Ash Coal Mine	.....	.....	.....	150	2.50	375.00
136.	Wooster Coal Mine	.....	.....	.....	Development work only		.....
	Total	215		537.50	350	.....	875.00

SLOPE COUNTY

137.	Krenz Coal Mine	.....	.....	.....	400	1.00	400.00
	Total	.....	.....	.....	400	.....	400.00

STARK COUNTY

No.	Name of Mine	1916 Production	1916 Av. price per ton at mine	1916 Total value	1917 Production	1917 Av. price per ton at mine	1917 Total value
138.	Gross Coal Mine	150	2.00	300.00	40	2.25	90.00
139.	Hokos & Benek Coal Mine	.....	.....	.....	683	2.25	1,536.75
140.	Lehigh Coal Mine	14,725	1.55	22,823.75	14,050	2.50	35,125.00
141.	North Creek Coal Mine	260	1.50	390.00	300	2.00	600.00
142.	North Star Coal Mine	3,000	1.50	4,500.00	1,523	2.00	3,046.00
143.	Pittsburg Coal Mine	13,878	1.75	24,286.50	25,588	2.50	63,970.00
144.	St. Mary's Coal Mine	500	2.00	1,000.00	1,711	2.00	3,422.00
145.	Zenith Coal Mine	27,836	1.75	48,713	30,443	2.50	76,107.50
	Total	60,349		101,023.25	74,338	.....	183,897.25

WARD COUNTY

No.	Name of Mine	1916 Production	1916 Av. price per ton at mine	1916 Total value	1917 Production	1917 Av. price per ton at mine	1917 Total value
146.	Bartoshivich Coal Mine	625	1.50	937.50	575	1.60	920.00
147.	Burlington City Coal Mine	9,657	2.00	19,314.00	9,533	2.50	23,832.50
148.	Coflisch Coal Mine	1,720	1.50	2,580.00	2,157	1.60	3,451.20
149.	Clark Coal Mine	No report		.....	1,500	2.50	3,750.00
150.	Colton Coal Mine	5,072	2.00	10,144.00	4,000	2.00	8,000.00
151.	Conan Coal Mine	2,509	2.00	5,018.00	5,920	2.50	14,800.00
152.	Crosby Coal Mine	450	2.00	900.00	1,000	2.00	2,000.00
153.	Davis Coal Mine	11,500	2.00	23,000.00	14,670	2.50	36,375.00
154.	Dakota Coal Co. Coal Mine	9,138	2.00	18,276.00	10,622	2.50	26,555.00
155.	Diamond Coal Mine	1,702	2.00	3,404.00	700	2.75	1,925.00
156.	Farmers' Coal Mine	950	1.80	1,710.00	1,869	2.30	4,298.70
157.	Foxholm Coal Mine	4,794	2.25	10,786.50	7,042	2.85	20,069.70
158.	Hot Blast Coal Mine	100	2.50	250.00	.....	.....	.....
159.	Houston Coal Mine	.....	.....	.....	100	2.50	250.00
160.	Hunnewell Coal Mine	2,000	1.75	3,500.00	3,500	2.00	7,000.00
161.	Johnson Coal Mine	6,570	2.25	14,782.50	5,818	2.50	14,545.00
162.	Klondike Coal Mine	410	2.50	1,025.00	400	2.50	1,000.00
163.	Larson Coal Mine	No report		.....	620	2.50	1,550.00
164.	Leeson No. 1 Coal Mine	3,000	1.50	4,500.00	3,620	1.50	5,430.00
165.	Leeson No. 2 Coal Mine	3,000	1.50	4,500.00	2,500	1.50	3,750.00
166.	Lloyd Coal Mine	9,377	2.00	19,754.00	17,481	2.35	41,080.35
167.	Mellon Coal Mine	700	2.00	1,400.00	1,040	2.50	2,600.00
168.	Rich Coal Mine	100	2.00	200.00	Development work only		.....

WARD COUNTY—Continued

169.	Seed Coal Mine	.....	.....	.....	100	2.00	200.00
170.	National Coal Mine	19,885	2.00	39,770.00	16,626	3.00	49,878.00
171.	Square Deal Coal Mine	483	2.25	1,086.75	500	3.00	1,500.00
172.	Superior Coal Mine	.....	.....	.....	161	3.00	483.00
173.	Tree-Bausch Coal Mine	375	1.50	562.50	522	1.60	835.20
174.	Vadnais Coal Mine	900	2.50	2,250.00	800	3.00	2,400.00
175.	Wallace Coal Mine	11,964	2.00	23,928.00	13,465	2.50	33,662.50
176.	Wood Coal Mine	3,356	1.50	5,034.00	3,966	1.80	7,138.80
	Total	110,337		218,612.75	130,807	.....	319,279.95

WILLIAMS COUNTY

177.	Aanonson Coal Mine	50	1.60	80.00	425	2.00	850.00
178.	Black Beauty Coal Mine	77	2.00	154.00	2,807	2.00	5,614.00
179.	Black Diamond Coal Mine	4,630	1.75	8,102.50	8,793	1.85	16,267.05
180.	Big Four Coal Mine	600	1.80	1,080.00	400	2.00	800.00
181.	Bryant Coal Mine	400	1.75	700.00	.....	.....	.....
182.	Bryne Coal Mine	2,746	1.75	4,805.50	5,401	1.85	9,991.85
183.	East Ellithorpe Coal Mine	.....	.....	.....	624	2.00	1,248.00
184.	Ellithorpe Coal Mine	7,242	2.00	14,484.00	7,519	2.15	16,165.85
185.	Erkie Coal Mine	.....	.....	.....	120	2.00	240.00
186.	Falk Coal Mine	2,695	2.00	5,390.00	1,150	2.00	2,300.00
187.	Folvog Coal Mine	855	1.65	1,410.75	750	2.00	1,500.00
188.	Freeman Coal Mine	320	1.60	512.00	No report	.....	.....
189.	Haugen Coal Mine	.....	.....	.....	120	2.00	240.00
190.	Head Coal Mine	2,825	1.75	4,943.75	6,000	1.85	11,100.00
191.	Husebye Coal Mine	15,067	1.75	26,367.25	15,728	2.25	35,388.00
192.	Johnson Coal Mine	400	1.60	640.00	700	2.00	1,400.00
193.	Lein Coal Mine	.....	.....	.....	652	2.00	1,304.00
194.	Lovejoy Coal Mine	5,000	1.90	9,500.00	6,500	1.85	12,025.00
195.	Miller Coal Mine	316	2.00	632.00	500	2.20	1,100.00
196.	Moorman Coal Mine	1,200	2.00	2,400.00	1,500	2.00	3,000.00
197.	Narveson Coal Mine	1,000	2.00	2,000.00	800	2.00	1,600.00
198.	Nelson & Anderson Coal Mine	.....	.....	.....	500	2.00	1,000.00
199.	*Reclamation Service Coal Mine	7,657	1.75	13,399.75	9,151	2.00	18,302.00
200.	Seabrook Coal Mine	.....	.....	.....	300	2.00	600.00
201.	Todd Coal Mine	.....	.....	.....	400	2.00	800.00
202.	Vizina Coal Mine	.....	.....	.....	200	2.00	400.00
	Total	53,080		96,601.50	71,000	.....	143,235.75

*Coal mined for power plant fuel only. No sales or shipments of coal.

PRODUCTION AND VALUE BY COUNTIES

County	1916 Output	1916 Value	1917 Output	1917 Value
Adams	$ 17,870	$ 31,758.70	$ 31,951	$ 58,313.55
Billings	21,099	1,995.00	29,160	53,180.45
Bowman	17,044	30,003.00	13,755	25,446.75
Burke	26,231	81,242.65	26,722	59,548.65
Burleigh	226,901	315,742.61	271,822	465,605.38
Divide	50,693	93,528.55	97,681	149,985.50
Dunn	3,129	5,488.50	5,327	11,008.50
Golden Valley	1,276	1,914.00	2,443	4,544.00
Grant	4,570	7,810.00	6,865	11,977.50
Hettinger	10,352	13,577.50	17,799	38,479.10
McLean	19,312	31,508.10	38,328	77,983.45
Mercer	12,787	22,501.75	15,301	30,026.00
Morton	36,776	50,083.75	42,994	62,906.45
Mountrail	2,910	5,170.00	4,040	5,853.75
Oliver	5,170	7,112.50	4,350	6,492.50
Renville	215	537.50	350	875.00
Slope	.....	.....	400	400.00
Stark	60,349	101,023.25	74,338	183,897.25
Ward	110,337	218,612.75	130,807	319,279.95
Williams	53,080	96,601.50	71,040	143,235.75
Totals	$ 680,101	$1,166,211.61	$ 885,473	$1,709,039.48

MINES THAT SHIP COAL AND AMOUNT SHIPPED

	Name of Mine	Tons shipped 1916	Tons shipped 1917
	ADAMS COUNTY		
1.	Clermont Coal Mine	1,317	1,758
2.	Haynes Coal Mine	5,750	14,563
8.	Reeder Coal Mine	.....	180
	BILLINGS COUNTY		
12.	High Grade Coal Mine	20,515	22,081
13.	Red Trail Coal Mine	.....	6,472
	BOWMAN COUNTY		
15.	Johnson Fuel Company Coal Mine	7,977	6,820
	BURKE COUNTY		
17.	Domrese Coal Mine	.....	245
18.	Fenster Coal Mine	2,000	200
20.	Kielhock Coal Mine	5,000	6,801
22.	Meade & Sims Coal Mine	.....	1,200
23.	Souther Coal Mine	5,610	5,000
24.	Sunlight Coal Mine	4,600	4.428
	BURLEIGH COUNTY		
27.	Backman Coal Mine	.....	150
31.	Peterson Coal Mine	.....	40
32.	Wilton Coal Mine	202,584	243,039
	DIVIDE COUNTY		
33.	Dougherty Coal Mine	948	10,995
34.	Hought Coal Mine	13,877	23,821
35.	Lorbeski Coal Mine	5,513	7,554
37.	Truax Coal Mine	25,000	50,282
	DUNN COUNTY		
43.	Hy Grade Coal Mine	.....	241

	Name of Mine	1916 Tons shipped	1917 Tons shipped
	GOLDEN VALLEY COUNTY		
50.	Grimm Coal Mine	.....	75
	HETTINGER COUNTY		
65.	Havelock Coal Mine	.....	1,000
67.	Kunze Coal Mine	.....	500
71.	Saddler Coal Mine	.....	4,172
72.	Square Deal Coal Mine	1,200	1,500
	McLEAN COUNTY		
75.	Bitumina Coal Mine	2,805	3,103
76.	Borchardt Coal Mine	.....	50
77.	Elm Point Coal Mine	.....	315
80.	Garrison Coal Mine	.....	10,150
84.	Pfister Coal Mine	.....	500
85.	Rupp Coal Mine	.....	1,800
86.	Seibel Coal Mine	.....	140
	MERCER COUNTY		
88.	Beulah Coal Mine	.....	3,783
89.	Dilger Coal Mine	.....	140
95.	Kesler Coal Mine	.....	740
101.	Reichengberg Coal Mine	.....	86
103.	Standard Coal Mine	2,985	820
	MORTON COUNTY		
110.	Knutson Coal Mine	.....	310
116.	New Salem Coal Mine	3,082	2,978
120.	Ramsland Coal Mine	.....	200
	STARK COUNTY		
140.	Lehigh Coal Mine	14,725	13,622
141.	North Creek Coal Mine	.....	100
143.	Pittsburg Coal Mine	13,235	25,300
145.	Zenith Coal Mine	26,584	30,155
	WARD COUNTY		
147.	Burlington City Coal Mine	9,657	6,869
150.	Colton Coal Mine	4,200	4,572
151.	Conan Coal Mine	.....	2,500
153.	Davis Coal Mine	10,000	12,309
154.	Dakota Coal Co. Coal Mine	7,632	9,991
157.	Foxholm Coal Mine	3,500	3,976
160.	Hunnewell Coal Mine	.....	270
163.	Larson Coal Mine	.....	500
164.	Leeson No. 1 Coal Mine	.....	120
166.	Lloyd Coal Mine	8,377	17,481
170.	National Coal Mine	10,000	11,054
172.	Superior Coal Mine	.....	100
175.	Wallace Coal Mine	11,964	13,464
176.	Wood Coal Mine	.....	196
	WILLIAMS COUNTY		
178.	Black Beauty Coal Mine	.....	1,829
179.	Black Ditmond Coal Mine	3,500	3,906
182.	Bryne Coal Mine	.....	827
184.	Ellithorpe Coal Mine	248	495
190.	Head Coal Mine	.....	200
191.	Husebye Coal Mine	3,298	2,972
194.	Lovejoy Coal Mine	.....	6,200
	Total	427,688	607,240

FATAL ACCIDENTS—1916

STARK COUNTY

No.	Name of Mine	Name of Employee	Address	Married	Nature of Accident	Cause	Date
140.	Lehigh Coal Mine ...	Martin Bjorkman	Boyceville, Wis....	No	Crushed	When pulling out with a loaded car out of his turn, he met another driver, jumped on the wrong side of a loaded car and was crushed..	Jan. 16

FATAL ACCIDENTS—1917

BOWMAN COUNTY

14.	Bowman Coal Mine ..	William Schwan	Bowman, N. D....	No	.....	Lump of coal fell on him	Mar. 3

BURLEIGH COUNTY

32.	Wilton Coal Mine ...	John George ...	Wilton, N. D.....	Yes	Killed	Jumped on cage after it started and only got partly on. Was carried up hanging on cage and got crushed between cage and itmbers	Aug. 17
		Joe Wiercinski..	Wilton, N. D.....	No	Killed	Coal fell on him.....	Dec. 11

WARD COUNTY

153.	Davis Coal Mine	Carl Reidel	Burlington, N. D..	No	Killed	He went back on his shots and was killed by mistaking one hole that had not gone off.	Oct.

WILLIAMS COUNTY

191.	Husebye Coal Mine ..	Jake Setzler.....	Williston, N. D. ..	No	Killed	Fell down shaft	Oct. 8

NON-FATAL ACCIDENTS—1916

ADAMS COUNTY

No	Name of Mine	name of Employee	Address	Married	Nature of Accident	Cause	Date
4.	Leff Coal Mine.....	Ben Anderson....	Unknown ...	No	Cut on face.....	Too close when shot was fired	Dec. 5

BILLINGS COUNTY

12.	High Grade Coal Mine	John Englebretch	Dickinson ..	Yes	.....	Walked into shots.....	Jan.

BURKE COUNTY

23.	Souther Coal Mine..	Lawrence Benson	Larson	No	.....	Pinched between two cars	Dec. 20
		Joseph Souther..	Larson	Yes	.....	Can of powder exploded	Jan. 24
		Harold Benson...	Larson	No	.....	Can of powder exploded	Jan. 24
24.	Sunlight Coal Mine..	Jonas Johnson...	Stampede ..	No	.....	Using single tape fuse..	Dec. 19

BURLEIGH COUNTY

32.	Wilton Coal Mine....	Wasyl Kasian..	Wilton	Yes	Body squeezed, badly bruised and sore.....	Caught between car and rib	Jan. 1
		Mike Kalentschuck	Wilton	Yes	Leg skinned and bruised about knee	Caught on box car loader	Jan. 5
		Mike Snour.....	Wilton	Yes	Back and hip sore and lame	Fell off box car.....	Jan. 18
		B. A. Baillett...	Wilton	Yes	Hit on head and knocked out	Fixing loader apron and chunk of coal hit him.	Jan. 5
		Wm. Wilson....	Wilton	Yes	Little finger broken	Caught between rope and pulley on car pulier	Jan.. 17
		Roy Krouph....	Wilton	No	Blood poisoning	Finger bruise	Jan. 25
		Mike Krush.....	Wilton	Yes	Foot bruised	Mine car jumped off track and hit his foot	Feb. 10
		Nick Ukronk....	Wilton	No	Rib broken	Pushing mine car and slipped and fell on coal	Feb. 18

No	Name of Mine	Name of Employee	Address	Married	Nature of Accident	Cause	Date
		Andrew Walker..	Wilton	Yes	Ankle sprained	Riding on cutting machine and foot got caught	Mar. 4
		Herman Henning	Wilton	No	Body squeezed and back hurt	Fall of coal	Mar. 10
		James Easton...	Wilton	No	Back bruised	Driving team and fell off wagon	Apr. 20
		Emil Polzin.....	Wilton	No	Arm broken	Kicked by horse on farm	May 5
		P. Bartholomew.	Wilton	Yes	Leg bruised	Foot caught between motor and car	June 16
		J. H. Rogers....	Wilton	Yes	Four toes broken	Coal fell on foot	June 16
		Christ Edinger..	Wilton	Yes	Back sprained	Pushing car and slipped	July 10
		William Ollenburger	Wilton	No	Left leg bruised above ankle	Driving coal wagon and got caught between wagon and building ..	Sept. 14
		Mike Cidar.....	Wilton	No	Finger bruised	Mine car ran over finger	Oct. 2
		Martin Munson..	Wilton	Yes	Scalded on leg	Pipe blew loose from boiler while blowing off	Oct. 26
		W. P. Gilmore...	Wilton	No	Side bruised	Fell off stool while putting up sights	Dec. 13
		Jake Patrick....	Wilton	Yes	Cut in calf of leg	Machine tooth ran in leg and mule started and he got caught	Dec. 20
		Dan Quigley.....	Wilton	Yes	Finger mashed	Jacking up mine car and jack slipped	Dec. 22
		Emil Polzin.....	Wilton	No	Foot injured	Lifting car on track and got caught between draw bar when car got on rail	Dec. 22
		Fritz Johnson...	Wilton	No	End of thumb nearly cut off	Had hand on rail when machine jack fell down on finger	Dec. 23

HETTINGER COUNTY						
65. Havelock Coal Mine..	Joe Schmidt.....	Havelock ...	No	.....	.....	.....
MORTON COUNTY						
110. Hebron Coal Mine....	F. Sezepanick...	Hebron.....	No	Lost right eye	Crimped cap too low with crimpers	Aug. 19
STARK COUNTY						
145. Zenith Coal Mine.....	Jas. Krenz.....	Zenith.....	No	Two legs broken	Pulling roof and was caught in the fall	July
WARD COUNTY						
146. Bartoshivich Coal Mine	John Marten.....	Velva.....	No	Leg broken	Coal fell on him	Oct. 18
158. Hot Blast Coal Mine.	John Miller.....	Donnybrook..	Yes	Body bruised	Coal fell on him	No record
166. Lloyd Coal Mine	Carl Peterson..	.....	No	.....	Went back on shot	.....
WILLIAMS COUNTY						
184. Ellithorpe Coal Mine.	Hans Fossum....	Williston	Yes	.....	Fall of coal	Dec. 8
191. Husebye Coal Mine..	George S. Wisher	.....	Yes	Broken leg	Caused by horse going off track while driver held his foot on spreader chain	.....
	E. F. Win.....	Williston	Yes	.....	He walked into room where shot had been placed thinking it had missed fire	Oct. 5

NON-FATAL ACCIDENTS—1917

BURLEIGH COUNTY

No	Name of Mine	Name of Employee	Address	Married	Nature of Accident	Cause	Date
32.	Wilton Coal Mine	F. W. Seeley	Wilton	Yes	Bruised leg	Fell under car wheel	Jan. 17
		Henry Ollenburger	Wilton	No	Foot bruised	Loaded car ran over foot	Jan. 26
		Elmer Johnson	Wilton	No	Foot scalded	Slipped into sump which had hot water in it	Feb. 2
		John Yakawanko	Wilton	No	Bone in leg near ankle broken	Falling coal	Feb. 2
		Nuffrey Nyknanko	Wilton	Yes	Foot bruised	Struck by motor and partly run over	Feb. 8
		Mike Garowski	Wilton	Yes	Knee wrenched	Digging ditch and broke through snow wrenching knee	Mar. 1
		Roy Eide	Wilton	No	Nose broken and face bruised	Driving team, sled turned over and team ran away	Mar. 10
		Andy Walker	Wilton	Yes	Both bones in right leg broken between knee and ankle	Cutting machine jack slipped and machine swung around	Mar. 19
		G. W. Howard	Wilton	No	Left leg bruised between knee and ankle	Foot caught between car and cage	May 1
		Mike Doneluke	Wilton	Yes	Toes bruised	Loading rails and dropped one on his foot	May 29
		George Gilmore	Wilton	No	Face cut	Piece of sheet iron fell and struck him on face	July 17
		Mike Doneluke	Wilton	Yes	Flesh on end of finger cut off	Finger caught between rope and pulley on car puller	July 24

32. Wilton Coal Mine....	G. E. Lamphier..	Wilton	Yes	Left eye injured	Piece of hot steel or babbit flew into it	July.24
	Christ Janner...	Wilton	Yes	Ribs broken	Team ran away and he fell off and got run over	Sept. 8
	Alex Dutton.....	Wilton	No	Knee bruised	Car jumped off track and hit his knee	Sept. 13
	Nick Adamyk...	Wilton	No	Shoulder pulled out of socket	Swinging around trolley pole and it jerked up and pulled out his shoulder	Sept. 28
	Alvin Lange.....	Wilton	Yes	Several fingers broken, one had to be partly amputated	Hand caught between cutting machine and pipe while machine was running	Oct. 6
	Martin Barrett..	Wilton	No	Finger crushed	Was going to pull out block from under car and his glove got caught and car ran over his finger	Oct. 20
	Walter Meyers..	Wilton	No	Face cut and bruised ...	Kicked by mule	Nov. 2
	John Liskobar...	Wilton	Yes	Leg bruised	Car jumped off track and caught leg between bumpers	Nov. 26
	Stanley Zubus...	Wilton	No	Bruised about back, head and legs	Coal fell on them	Dec. 21
	M. D. Gilard.....	Wilton	Yes	Hand scalded	Escaping steam	Dec. 31
			DUNN COUNTY			
46. Sloan Coal Mine	Lee O'Brien.....	Dodge	Yes	Hands, face, back and side burned	Small amount of powder on track was lighted and exploded on open keg of powder	Nov. 21
	Boul Fritz.....	Dodge	Yes	Hands, face and back burned	Small amount of powder on track was lighted and exploded on open keg of powder	Nov. 21

No.	Name of Mine	Name of Employee	Address	Married	Nature of Accident	Cause	Date
		Ralph Norton...	Dodge	No	Hands and bace burned.	Small amount of powder on track was lighted and exploded on open keg of powder	Nov. 21
		DIVIDE COUNTY					
33.	Dougherty Coal Mine.	D. Ford.....	Noonan	No	.....	Falling coal	Mar.
		Chas. Johnson...	Noonan	Yes	.....	Cable broke letting car down incline into mine	Oct.
37.	Truax Coal Mine.....	Richard Sundquist	Noonan	No	.....	Fall of clay	Nov. 7
		L. Kinney.....	Noonan	No	.....	Fall of clay	Nov. 21
		Ray Tourtelotte.	Noonan	No	.....	Caught in automatic cage	Dec. 13
		Joe McGovern...	Noonan	No	.....	Caught in automatic cage	Dec. 13
		McLEAN COUNTY					
77.	Elm Point Coal Mine	F. E. Lilly.....	Underwood	Yes	Bruise	While lifting a practically derailed car onto the track he slipped and fell on his side	Nov.15
80.	Garrison Coal Mine..	Sam Daniels.....	Garrison	Yes	Crushed	Riding bumper of car, lost balance and was squeezed between prop and car	.....
82.	Johnson Coal Mine ...	Erick Ablestad..	Garrison	No	Broken leg, later amputated above ankle	Car which broke from steel cable ran over his leg	Oct. 26

WARD COUNTY

151.	Conon Coal Mine	Max Schaenhear.	Burlington ..	No	Broken leg	Chunk of coal fell on him	Oct. 15
156.	Farmers' Coal Mine..	John Hagen.....	Bowbells	No	Bruised back	Falling clay	Oct. 4
		Jack Hansen....	Bowbells	No	Bruised back	Falling clay	Dec.
157.	Foxholm Coal Mine..	J. O. Strome....	Foxholm	No	Cuts about the head....	Returned to room before all shots had exploded	Oct. 24
		Louis Tony.....	Foxholm	Yes	.....	Returned to room before all shots had exploded	Oct. 24
170.	Smith Coal Mine	Theo. Bakken...	Kenmare ...	Yes	Broken limb	Falling clay	July 19
		Phillip Hallick...	Kenmare ...	Yes	Broken limb	Falling clay	May 11
		Elias Aaland.....	Kenmare ...	No	Broken limb	Falling clay	Oct. 24
176.	Wood Coal Mine	John Segal.....	Velva	Yes	Strained leg	Chunk of coal fell on him	Feb.

WILLIAMS COUNTY

182.	Bryne Coal Mine	Charles Vance...	Williston.....	Yes	Bruised and shaken	Fell off trestle	Dec. 5
184.	Ellithorpe Coal Mine.	Frick Fredricks.	Williston.....	No	Ankle sprained and face scratched	Falling roof	Jan. 10
		Hugh Thompson.	Williston.....	No	Face cut and hand bruised	Went back on his shot..	Jan. 22

ADDITIONAL COAL MINE DATA

ADAMS COUNTY

1. CLERMONT COAL MINE.

The Clermont Coal Mine, owned and operated by the Clermont Coal Company of Haynes, is situated about two miles northwest of Haynes. Mr. A. W. Peterson is in active charge of the mine. The coal bed is 16 feet thick and is reached by a slope. About six feet of coal is left for a roof and very little timbering is required. A steam hoist is used for hauling the cars from the mine, and the tipple is provided with two stationary screens and two storage bins having a combined capacity of 20 tons. Ventilation is secured by means of an air shaft. The mine buildings consist of an office and store rooms, a dwelling house, a powder house, barns, and a tipple. When inspected January 29, 1918 this mine was in very good condition.

2. HAYNES COAL MINE.

The Haynes Cooperative Coal and Mining Company of Aberdeen, S. D. owns and operates the Haynes Coal Mine. This mine is situated two and one-half miles northeast of Haynes and is connected to the main line of the C. M. & St. P. by a spur, over which the Company operates its own locomotive. The coal bed is about 15 feet in thickness and is reached by a slope through which the coal is hauled to the tipple by a steam hoist. From four to five feet of coal is left for a roof and very little timber is necessary. The tipple has a five ton hopper into which coal is dumped for local trade, and a chute for loading the coal into box cars. The office and scale room is situated on the tipple also. The buildings consist of a tipple, a power plant, a rooming house, a round house, a boarding house, a miners' cabin, two residences, and a barn. A 175 H. P. engine with 250 volt generator is to be installed during the summer of 1918 and motor haulage and undercutters will be used. J. B. Slosson is president of the company, and Martin Smith acts as mine manager.

With the exception of inadequate ventilation, the conditions were satisfactory when the mine was inspected January 28, 1918.

3. HETTINGER ELECTRIC LIGHT AND POWER CO. COAL MINE.

The Hettinger Electric Light and Power Co. Mine is owned and operated by Gus Smith and Tony Schmickrath, who operates it in connection with their power plant which is located five miles north of Hettinger. The coal bed is 10 feet thick and reached by a slope. Water is encountered in the mine which is removed by means of a steam pump. A Jeffry electric undercutter is used, and the coal is hauled from the mine to the tipple by means of a steam hoist, where it is dumped automatically into a chute provided with a three inch screen. The coal is loaded into wagons

and the screenings are used in the boiler room. The power plant at this mine supplies the town of Hettinger with electricity. The mine buildings consist of a power plant and a tipple, two dwellings, two barns, and a powder magazine. Air circulation is secured through the slope of the old mine.

Conditions were satisfactory on January 28, 1918.

4. LEFF COAL MINE.

The Leff Coal Mine, owned and operated by Albert Leff, is situated one and one-half miles southeast of Reeder and is worked as a surface mine. From 10 to 14 feet of clay has to be removed before the coal is exposed. The coal bed is eight feet thick and the clay is removed by means of a Vulcan steam shovel. Some water is encountered in the mine which is removed by means of a gas driven centrifugal pump. This mine was inspected January 26, 1918.

5. PEARL BUTTE COAL MINE.

The Pearl Butte Coal Mine, located eleven and one-half miles from Haynes, is owned by P. W. Boehm and is leased and operated by Clarence Holdridge. Coal at this point is 12 to 14 feet in thickness and is reached by a drift about 250 feet in length. Powder is purchased in fifteen hundred pound lots and is stored a quarter of a mile from the mine. One keg is allowed in the mine at a time and all shots are fired at noon and evening. 6x6 and 6x8 posts are used for timbering. The mine is dry.

6. MINNEHAHA COAL MINE.

The Minnehaha Coal Mine is located about two miles northwest of Reeder, and is owned and operated by Andrew Jepson. The coal bed which is from two to three and one-half feet in thickness is mined by stripping, and from five to seven feet of clay must be removed before the coal is exposed. Some water is encountered and this is drained off by means of an open ditch.

The foregoing report was made March 8, 1918.

7. PINKHAM COAL MINE.

The Pinkham Coal Mine, situated ten miles northeast of Haynes, is owned and operated by Wm. Pinkham and supplies only a local trade. There are two beds of coal, the lower one 14 feet thick and the upper one two feet thick, with a parting of clay 18 inches thick. The coal is reached by a slope, about four feet of coal is left for a roof and very little timbering is necessary. Ventilation is secured by means of an air shaft. The coal is screened at the tipple. The mine buildings consist of an office and scale room, a tipple, a barn, and a dwelling.

On January 27, 1918 the conditions in this mine were very good.

8. REEDER COAL MINE.

The Reeder Coal Mine is a new mine, located three quarters of a mile southeast of Reeder. It is owned by the National Briquetting Company of Minneapolis and operated by the Reeder Coal Company, with J. L. Hjort acting as manager. The coal bed is eight feet thick and is reached by a drift. A dump is provided for loading the coal into wagons. The mine buildings consist of an office and scale room, a bunk house, a boarding house, and a barn.

On January 25, 1918 the entries had been driven 150 feet and no rooms had been turned.

9. STEPHENSON AND GUNDERSON COAL MINE.

The Stephenson and Gunderson Coal Mine, located about three miles northeast of Haynes, has a coal bed about twelve and one-half feet thick.

During the winter of 1915 and 1916 the coal mine caught fire in a part of the old works. This section was sealed from the other part of the mine and the driving entries were continued, but the fire broke through into the part of the mine that was being worked, so the mine had to be sealed and abandoned.

When the mine was inspected January 2, 1918 a new slope was being driven a short distance from the old mine.

10. WILLIAMSON COAL MINE.

The Williamson Coal Mine is located about two miles north of Haynes. The coal bed is 15 feet thick and reached by a slope. As this mine was only recently opened, the entry has only been driven a short distance and only one room has been started. About 10 feet of the coal is removed, leaving five for a roof. The coal is hauled by horse power from the mine to the tipple where it is dumped into a chute of two and one-half tons capacity.

Conditions were found satisfactory when the mine was inspected January 28, 1918.

BILLINGS COUNTY.

11. DEMORES COAL MINE.

The DeMores Coal Mine, situated about half a mile from Medora, is owned by the Northern Pacific Refrigerator Car Company and is leased and operated by H. G. Kinmarck. The coal bed is about eight feet thick and is entered from the side of a steep bluff. About two feet of coal is left for the roof and considerable timbering is done. The coal is hauled by hand from the mine to a small tipple, where it is dumped directly into wagons. This mine supplies only the local demand. Ventilation is secured by means of an air shaft. Conditions were satisfactory when it was inspected January 15, 1918.

12. HIGH GRADE COAL MINE.

The High Grade Coal Mine which is situated on a spur just east of the town of Medora is owned and operated by N. D. Nichols. The coal bed is from seven and a half to nine feet in thickness and is reached by a drift from the side of the bluff. From one and a half to two feet of coal is left for the roof and considerable timbering is done in the rooms, while very little is necessary in the entries except where they have been affected by a squeeze. Ventilation is secured by means of an air shaft and gas driven fan. The tipple is provided with three chutes, one for run of mine coal, one for screen coal and one for slack. The mnie buildings consist of an office and store rooms with shower bath in connection, a boarding house, a powder magazine, two bunk houses, one dwelling, a tool house, a blacksmith shop and a tipple house. When this mine was inspected January 15, 1918 conditions were very good.

13. RED TRAIL COAL MINE.

The Red Trail Coal Mine is situated on a spur at Little Missouri which lies just across the river from Medora. It is owned and operated by the Broodie Coal Mining Company of Dickinson, with Roy Butler acting as Superintendent. The coal bed is seven feet thick and only two feet are left for a roof. Considerable difficulty has been experienced in holding the roof, a great many timbers being necessary. Ventilation is secured by means of an air shaft. The tipple is provided with two chutes, one with a three inch screen and the other for loading slack into box cars. The mine buildings consist of a blacksmith shop, a tipple, a powder house, an office and work rooms. Conditions in and about the mine were in a very satisfactory condition when inspected January 15, 1918.

BOWMAN COUNTY

14. BOWMAN COAL MINE.

The Bowman Coal Mine which is located about five miles north of Bowman is owned by Jas. Touhey but is leased and operated by J. C. Palmer. The coal bed is about 30 feet thick and is reached by a slope. About 15 feet of coal is mined, leaving 10 feet for a roof and about five feet in the floor. At this level no water is encountered, though water is found at the bottom of the coal. There are turned off the entry rooms which are being driven too wide considering the small number of props that are being used. The mine buildings consist of office and scale room, a tipple, a small house, and a barn. This mine was inspected January 25, 1918 and found to be in fair condition.

15. JOHNSON FUEL COMPANY COAL MINE.

The Johnson Fuel Company Coal Mine is owned by the Johnson Fuel Company and is situated at Scranton. A spur connects the mine with the Milwaukee Railway. A tipple is provided with two chutes for loading the coal into box cars. No screens are used, the slack being removed by forks in the cars. The coal bed which is being worked is 19 feet thick, and three feet below this bed is another bed of coal 12 feet thick. The coal bed is reached from a slope and a double entry system of mining is used. Six feet of coal is left for a roof and very little timbering is necessary. Some water is encountered which is removed by a gas driven pump, and ventilation is secured by means of an air shaft and caved rooms. A briquetting plant for making briquettes without a binder is situated beside this mine. It is the intention of the Company to install more units at this plant and the underground method of mining is to be abandoned. The company has bought a large steam shovel for stripping purposes, as from 10 to 30 feet of clay overlies this coal. When the mine was inspected January 26, 1918 conditions were satisfactory.

BURKE COUNTY.

16. BONSNESS COAL MINE.

The Bonsness Coal Mine, owned by O. E. Bonsness, is situated three and one-half miles south of Stampede. The coal bed is from four to five feet thick and the mine is operated as a surface mine. About nine feet of clay has to be removed before the coal is exposed. Some water is

encountered which is removed by a tank pump. This mine was opened in the fall of 1917 and supplies only a small local demand. It was inspected March 7, 1918.

17. DOMRESE COAL MINE.

This mine was formerly owned by H. J. Domrese but recently has been purchased by Carl Larson who operates it as a surface mine. It is situated about five miles southwest of Columbus. The coal bed is from nine to ten feet in thickness and from eight to ten feet of clay has to be removed before the coal is exposed. Some water is encountered in the mine which is removed with a gas engine driven centrifugal pump. The mine was inspected March 7, 1918.

18. FENSTER COAL MINE.

The Fenster Coal Mine, situated about four and one-half miles southwest of Larson, is operated by Wagner & Haffner. The coal bed is from nine to ten feet thick and the mining is done mostly by stripping although during the summer months some underground work is done. In stripping, from 10 to 15 feet of clay has to be removed. A steep slope has been driven into the coal where some underground work is done. A small tipple is provided for loading the coal into wagons. The mine was inspected March 8, 1918 and was in a safe condition.

19. HAGEN COAL MINE.

The Hagen Coal Mine, situated nine miles east of Noonan, is owned and operated by Hagen Brothers. The coal bed is six feet thick and is reached by a slope through which the coal is hauled to a tipple by a gas engine hoist. Some water is encountered in the mine which is removed by a gas engine driven pump. This mine supplies only a small local demand. The foregoing report was made January 9, 1917.

20. KIELHOCK COAL MINE.

The Kielhock Coal Mine, owned and operated by Kielhock and Wixom, is situated four and one-half miles south of Columbus. The coal bed is from eight to ten feet thick and the mine is operated as a surface mine. From 10 to 18 feet of clay has to be removed and this is done during the summer months by contract. Some water is encountered in the mine which is removed by a gas driven centrifugal pump. Coal is shipped from this mine by hauling it to Columbus or to a spur three and a half miles distant. When it was inspected March 7, 1918 about 4000 tons of coal were found stripped.

21. MAKEE COAL MINE.

The Makee Coal Mine is situated seven miles north of Columbus. It is owned by the Shannon G. Ruffcorn estate and is leased and operated by Charles Tauber. The coal bed is six feet thick and reached by a shaft 40 feet deep. The coal is hoisted through the shaft by a team and cable where it is dumped from the tipple directly into wagons. An old slope opens into a coulee and provides ventilation. Some water is encountered which is removed by means of a tank pump. When inspected March 7, 1918 the mine was found practically worked out. It is the plan of the operator to drive a shaft on the side of the coulee where it will not be necessary to hoist the coal.

22. MEADE AND SIMS COAL MINE.

The Meade and Sims Coal Mine is situated four and a half miles south of Columbus. It is owned by William Metzger and leased and operated by J. Meade and M. Sims who operate it as a surface mine. The coal bed is eight feet thick and about seven feet of clay must be removed before the coal is exposed. Some water is encountered in the mine which is removed by means of a gas driven rotary pump. Most of the coal from this mine is hauled to Columbus and shipped. It was inspected March 7, 1918.

23 SOUTHER COAL MINE.

L. Souther owns and operates the Souther Coal Mine which is situated four miles southwest of Larson. The coal bed is from nine to eleven feet thick and is reached from a short slope driven from the bottom of a small coulee. A steam hoist is used for hauling the coal from the mine. Some water is encountered which is removed by a steam driven centrifugal pump. The mine buildings consist of a dwelling house, a bunk house, a barn, a boarding house, a powder house, and a tipple. When the mine was inspected March 8, 1918 the slope was found full of water and the mine could not be entered. The slope is situated so that the melting snow runs into it during the spring thaw.

24. SUNLIGHT COAL MINE.

The Sunlight Coal Mine, formerly known as the Greenup Mine, is owned and operated by J. S. Greenup. It is situated four and a half miles southeast of Columbus. The coal bed is 10 feet thick and is operated as a surface mine. About 18 feet of clay has to be removed from the coal and a Marion two and a half yard steam shovel is used for stripping purposes. The clay is hauled from the shovel in small dump cars. Some water is encountered in the mine which is removed by means of a gas engine driven pump and tile drain. Most of the coal from this mine is hauled to a spur and shipped. The mine was inspected March 7, 1918.

25. ZIMDARS AND HALL COAL MINE.

The Zimdars and Hall Coal Mine is situated five miles south of Lignite. The mine, which is owned by Ole Beckedahl but leased and operated by H. Zimdars and J. Hall, was opened in the fall of 1917. The coal bed is eight feet thick and reached from a slope, and about two feet of coal is left for a roof. The tipple is provided with a gas engine hoist and scale and the coal is dumped directly into wagons. Water is pumped from the mine by means of a gas engine but no means of ventilation has been provided. The mine buildings consist of a dwelling house, a bunk house and an engine house. The mine was inspected March 8, 1918 and conditions were found to be fairly good.

BURLEIGH COUNTY

The Asplund Coal Mine, situated four miles southeast of Wilton, is owned by Wm. Asplund, but leased and operated by T. J. Asplund. The coal bed is 12 feet thick and reached by a steep slope. About four feet of coal is left for a roof and very little timbering is necessary. The coal

is hauled from the mine by a team and a long cable. A dump with chute is provided for loading the coal into wagons. Ventilation is secured by means of an air shaft which is too far from the face to insure a good quality of air. The mine buildings consist of a dwelling and a barn. The owner's farm buildings are a short distance from the mine. It was inspected on February 19, 1918.

27. BACKMAN COAL MINE.

Emil Backman owns and operates the Backman Coal Mine which is situated three and one-half miles southeast of Wilton. The coal bed is 12 feet thick and reached by a steep slope. A gas engine hoist is used to haul the cars to the entrance of the mine, where the coal is dumped directly into wagons. From three to four feet of coal is left for a roof and very little timbering is done. Some water is encountered in the mine which is removed once a week by means of a gas driven pump, and ventilation is provided by means of an air shaft. Conditions were satisfactory when the mine was inspected February 19, 1918.

28. BERGER COAL MINE.

The Berger Coal Mine, situated seven miles northeast of Baldwin, is owned and operated by C. H. Berger. The coal bed is six feet thick and reached by a steep slope. The cars are hauled from the mine by a team hitched to a cable and a tipple with a chute is provided for loading the coal into wagons. This mine was opened in 1915 and supplies only a local demand. The foregoing report was made February 20, 1918.

29. LAUBACH COAL MINE.

The Laubach Coal Mine, situated four and a half miles southwest of Wilton, which is owned by R. A. Laubach but leased and operated by M. L. Ferrick, was opened during the fall of 1917. The coal bed is four and a half feet thick, overlying about 80 feet of clay, and is reached by a very steep slope. The coal is hauled from the mine by a team and cable and a tipple and chute are provided for loading the coal into wagons. Some water is encountered in the mine but this is removed by means of a gas-driven pump. Considerable difficulty is experienced in holding the roof, making much timbering necessary. Ventilation is secured by means of an air shaft. When the mine was inspected February 20, 1918, the air shaft was frozen full of ice at the bottom and the air was very poor.

30. LIND COAL MINE.

Mrs. Anna Lind owns the Lind Coal Mine, which is situated two and a half miles east of Wilton and is leased and operated by J. A. Johnson. The coal bed is from 10 to 11 feet thick and reached by a slope. A team and cable are used to haul the coal from the mine and a chute is provided for loading the coal into wagons. About two feet of coal is left for a roof and very little timbering is necessary. Ventilation is secured by means of an air shaft and no water is encountered. When inspected February 19, 1918 the mine was not in operation as the new leasee was about to occupy the mine. A new slope is to be driven during the summer of 1918, as the timber in the present slope was in poor condition.

31. PETERSON COAL MINE.

The Peterson Coal Mine, situated four miles southwest of Still, is owned

by C. J. Peterson but leased and operated by Tom Scott. The coal bed is from nine to 13 feet thick and reached by a slope through which the coal is hauled by means of a team hitched to a long cable. A chute is provided for loading the coal into wagons. Some water is encountered in the mine, making it necessary to leave about four feet of coal in the bottom while about one foot is left in the roof, which makes some timbering necessary in the rooms. An air shaft supplies ventilation. Only a local demand is supplied by this mine. When inspected February 19, 1918 it was in a satisfactory condition.

32. WILTON COAL MINE.

The Wilton Coal Mine owned by the Wilton Lignite Coal Company is situated three miles east of Wilton. The coal bed is 13 feet thick and the panel system of mining is used. The coal is hoisted from the mine by steam through a double compartment shaft, automatic cages being used. The tipple is also provided with an automatic scale and mechanical screens. Three box car loaders are used, two for loading coal and one for loading slack. A power plant is located at the mine which furnishes power for nine Jeffery undercutters. Electric motors are used in the mine on the main haulage ways, while mules are used in the rooms and side cages. The motor repair shop is located in the mine. All buildings in connection with the mine are brick and include a power plant, an office and store room, a blacksmith shop, a bath room, a fan building and a powder magazine. A switch engine is provided for hauling the cars. Very little timbering is done in the mine. Some water is encountered which is removed by electrically driven pumps. W. P. Macomber is manager and P. J. Cahill Superintendent. When the mine was inspected February 20, 1918, the conditions were very good.

DIVIDE COUNTY.

33. DOUGHERTY COAL MINE.

The Dougherty Coal Mine, located about one mile southeast of Noonan, is owned by Chas. Dougherty but is leased and operated by Chas. Alton. The coal bed is seven feet thick and reached by a short slope, through which the coal is hauled by means of a steam hoist. An endless chain is used to which the cars are fastened and hauled to the surface. They are lowered into the mine by means of a cable and drum. The tipple is provided with a chute having two screens, one inch and three-eights of an inch, over which the coal is passed into wagons. One-half foot of coal is left for a roof and two rows of props are placed in the rooms. No water is encountered in the mine and ventilation is secured by means of an air shaft. The mine buildings consist of a boiler and engine room, a tipple, an office, a boarding house, a bunk house and a barn. On March 9, 1918 conditions were found very good.

34. HOUGHT COAL MINE.

The Hought Coal Mine is located one mile southeast of Noonan and is owned and operated by James Hought. The coal bed is seven feet thick and reached by a short slope driven in the east bank of the coulee. The coal is hauled from the mine by horse power and delivered to the tipple which is provided with two chutes having three-fourths of an inch bar

screens over which the coal is dumped into wagons. As about one foot of coal is left for a roof, two rows of props are placed in the rooms, and timbers are placed in the entries where necessary. Considerable entry work has been done in preparation for the season of 1918 and about 60 room necks have been driven. When this mine was inspected March 9, 1918 conditions were very good.

35. LORBESKI COAL MINE.

The Lorbeski Coal Mine, owned and operated by John Lorbeski, is situated one mile east of Noonan just north of the Hought Coal Mine. The coal bed is seven feet thick and reached by a short slope. A team hitched to a long cable is used to haul the cars from the mine. The tipple is provided with a chute having a three-fourths of an inch screen over which the coal is dumped into wagons. About one-half a foot of coal is left for a roof and two rows of props are placed in the rooms. No timbering is done in the entries but the slope is well timbered. Some water is encountered in the mine which is removed by means of a well pump and windmill. Ventilation is secured by means of an air shaft, but curtains should be placed so as to force the air through the rooms. On March 9, 1918 when this mine was inspected, conditions were satisfactory.

36. MATHIESON COAL MINE.

The Mathieson Coal Mine owned and operated by Ludvig Mathieson is situated on Writing Rock Hill seven miles south of Alkabo. The coal bed is 28 feet thick, has three small clay partings, and is tilted almost on edge. A very steep incline, two hundred fifty-two feet in length, leads to the coal bed and a whim is used to haul the coal from the mine. No method of ventilation is provided and considerable gas was found in the mine, but no water is encountered. This mine supplies only a small local demand. It was inspected March 11, 1918.

37. TRUAX COAL MINE.

The Truax Coal Mine, located one and one-quarter miles southeast of Noonan, is owned and operated by E. M. Truax. A new shaft was sunk during the summer of 1916 a quarter of a mile south of the old mine and a spur connects this mine with the Great Northern Railroad. The coal bed is from seven to nine feet in thickness and about one foot of coal is left for a roof. Two rows of props are placed in the rooms and very little timbering is done in the entries, but considerable difficulty is experienced in holding the roof, as many cave-ins occur. Some water is encountered in the mine which is removed by electrically driven pumps. Ventilation is secured by means of two air shafts with electric fans. The steel tipple is provided with an automatic bucket hoist, the coal being dumped into this bucket at the bottom of the shaft, and a mechanical screen. An Ottumwa box-car loader is used. A 100 H. P. electric plant, located at the old mine, furnishes power for the hoist, the screen, the air fan, the pumps and the Jeffrey undercutter. This plant also furnishes light and power for the city of Noonan. The mine was inspected on March 9, 1918.

38. ARMBERNST COAL MINE.

The Armbernst Coal Mine is a smal mine which was opened during the summer of 1917. The coal bed is from three to five feet in thickness and

is covered with from five to ten feet of clay. This mine supplies a small local demand only.

DUNN COUNTY

39. BANG COAL MINE.

The Bang Coal Mine is located one-half mile south of Dunn Center and is owned by John Bang. The coal bed is 14 feet thick and the mine has been operated as a surface mine. Part of the bed underlies the bed of a creek and considerable difficulty has been experienced in handling the water. When inspected February 15, 1918, this mine was not in operation.

40. BLECHA COAL MINE.

The Blecha Coal Mine is situated one and one-half miles south of Manning and is owned and operated by Tom Blecha. The coal bed is about six feet thick and is mined by stripping, the removal of from 20 to 35 feet of clay being necessary before the coal is exposed. Some water is encountered which is removed by a gas driven rotary pump. Only a small demand is supplied by this mine. The foregoing report was made February 15, 1918.

41. CHASE COAL MINE.

The Chase Coal Mine is owned and operated by W. A. Gonye, and is situated about eight miles south of Dunn Center. There are two beds, the upper one being four feet thick and the lower one three and one-half feet thick with a three foot parting of clay between. About six feet of clay is stripped from the coal. Some water is encountered which is ditched off. Only a local demand is supplied by this mine. The foregoing report was made March 13, 1918.

42. HEISER COAL MINE.

The Heiser Coal Mine is located two and one-half miles southeast of Manning; it is owned by the Everett Real Estate Company and is leased and operated by S. M. Black. The coal bed is five feet thick and from eight to nine feet of clay must be removed. Water is ditched from the mine. Practically all coal mined here is hauled to the town of Manning. The foregoing report was made February 15, 1918.

43. HY GRADE COAL MINE.

A. H. Pelton owns and operates the Hy Grade Coal Mine which is located two miles east of Dunn Center. The Coal bed is 20 feet thick. An 8 by 12 two compartment shaft is provided, but only one of the cages is in use. A steam tractor is used for hoisting the coal from the mine and the tipple is provided with a chute with a two-inch screen, over which the coal passes into wagons. Considerable water is encountered in the mine which is removed by a steam driven centrifugal pump. Eight feet of coal is left in the roof and two feet is left in the floor, so very little timbering is necessary. The owner expects to connect his mine with the Northern Pacific Railroad by a spur during the summer of 1918. Conditions were very good when the mine was inspected February 15, 1918.

44. PAULSON COAL MINE.

This mine which is situated three and a quarter miles southwest of

Werner, is owned by Paul Paulson but is leased and operated by Torger Helegson. The coal bed is from 16 to 18 feet thick and reached by a drift driven from the bank of the creek. From eight to ten feet of coal is left in the roof and no timbering is done. Ventilation is secured by means of an air shaft and no water is encountered. The coal is hauled from the mine in sledges and shoveled into wagons. It was inspected February 15, 1918 and found in good condition.

45. PULVER AND LOGAN COAL MINE.

The Pulver and Logan Coal Mine is located about one mile east of Werner and is operated as a surface mine supplying a local demand. It is owned by Pulver and Logan and operated by H. I. Dorwin. The coal bed is about five feet thinck and from four to five feet of clay is removed. Some water is pumped from the mine. The foregoing report was made March 6, 1918.

46. SLOAN COAL MINE.

The Sloan Coal Mine, situated about one-half mile west of Dodge, is owned by Henry Sloan and operated by Norton and Fritz. The coal bed is seven feet thick and reached by a drift. One foot of coal is left for a roof and one row of props is placed in the rooms. Ventilation is secured by means of an air shaft and no water is encountered. The tipple is provided with three chutes for loading coal into wagons. A horse is used to haul the coal from the mine. When the mine was inspected February 14, 1918 conditions were found satisfactory.

47. THREE STAR LIGNITE COAL MINE.

The Three Star Lignite Coal Mine is owned and operated by Sam Curley and is situated about 10 miles southwest of Dunn Center. The coal bed is 16 feet thick and is operated as a surface mine, the removal of 10 feet of clay being necessary before the coal is exposed. Water is removed from the mine by means of a gas driven pump. During the latter part of the winter the mine froze up and was not operated. Only a local demand is supplied. The foregoing report was made March 19, 1918.

GOLDEN VALLEY COUNTY

48. CORLISS COAL MINE.

The Corliss Coal Mine is located about nine miles south of the town of Sentinel Butte on the south side of a small butte, and is owned and operated by I. J. Corliss. Formerly this mine was operated as a strip pit, but at present it is being worked underground. Only a small local demand is supplied and no definite system of mining is followed. The buildings consist of a dwelling which serves as a scale room. When the mine was inspected January 14, it was found to be in very poor condition.

49. CUSICK COAL MINE.

The Cusick Coal Mine which is owned by J. Cusick is located on the south side of Sentinel Butte, about four miles south of the town of Sentinel Butte. The coal bed is about 28 feet in thickness, about seven feet of coal is left for a roof, from about 9 to 11 feet is mined, and from 10 to 12 feet is left in the floor. This amount is left in the floor because water is encountered if more coal is taken from beneath. Pillars are left at intervals of about 20 feet but these pillars have no definite size

or shape, though they will possibly average about 15 feet in diameter. Very little timbering is done because of the stable character of the roof coal. Teams drive into the mine and load the coal at the working face. No definite system of mining is followed. The mine was inspected January 14, 1918 and found in satisfactory condition.

50. GRIMM COAL MINE.

The Grimm Coal Mine, formerly known as the Madland Coal Mine, is now owned and operated by J. P. Grimm and is situated about four and one-half miles south of the town of Sentinel Butte. The coal bed is about 30 feet thick and is entered by a drift. No definite system of mining is followed other than the driving of the entry along which pillars about 15 feet in diameter are left at intervals of about 20 feet. Very little timbering is done as a large amount of coal is left in the roof. The entries are driven too wide to be of any permanent use. Teams are driven into the mine where the coal is loaded from the working face. The mine was inspected January 14, 1918.

51. PORTER COAL MINE.

The Porter Coal Mine which is located about nine miles southwest of the town of Sentinel Butte, is operated by W. H. Porter. The coal bed is about 30 feet in thickness and reached by a drift driven into the coal from the side of the hill. No definite system of mining has been followed and the drift, formerly driven, was found blocked with clay which had fallen from above the entry. This necessitated the driving of a new drift beside the former one in order to recover coal in the old workings. The inside of the mine was also found badly caved when inspected January 14, 1918.

52. SENTINEL BUTTE COAL MINE.

The Sentinel Butte Coal Mine, owned by the Hunter Land Company of Minneapolis and formerly leased by F. C. Dempsy, is now leased by R. L. Barnett. The coal bed is about 30 feet thick and the mine is reached by a drift through which teams are driven into the mine to the face where the coal is loaded into wagons. The entry and breakthrus between the rooms are driven wide enough to allow teams and wagons to enter to the face very readily. Pillars about 35 feet square are left between the rooms and no timbering has ever been done in this mine. A very tough grade of coal is found in the roof which has stood for several years and does not show any signs of caving. About 10 feet of coal is left in the floor and about eight feet is left for a roof. A scale is placed inside of the mine. This mine was inspected January 14, 1918.

GRANT COUNTY

53. BLACK DIAMOND COAL MINE.

The Black Diamond Coal Mine, owned by Mamie M. Dunn and located two and one-half miles southwest of Leith, is leased and operated by S. S. Houser. The coal bed is eight feet thick and reached by a shaft 41 feet deep. An eight H. P. gas engine is used to hoist the coal from the mine, and a separate compartment is provided in the shaft for a stairway.

A chute is provided for dumping the coal directly into wagons, and another chute is provided to take care of the waste slack. The double entry system of mining is followed and two air shafts are provided for ventilation. The cars under ground are hauled by a mule. Some water is encountered which is removed from the mine by means of a small force pump driven by a three H. P. gas engine placed in the mine. Some of the entries were found badly caved and the coal was being mined only at a point near the shaft when the mine was inspected February 2, 1918.

54. COFFIN BUTTE COAL MINE.

The Coffin Butte Coal Mine which is owned by the Northern Pacific Railroad Company but leased and operated by R. C. Babcock, is situated 18 miles southwest of Elgin. The coal bed is nine feet thick and mined as a surface mine, the removal of from eight to sixteen feet of clay being necessary. Water is encountered which is removed by a gas driven pump. A large local demand is supplied. This mine was reported March 8, 1918.

55. LEHNER COAL MINE.

The Lehner Coal Mine is a small strip pit, owned and operated by J. Lehner. It is located four and one-half miles southwest of Heil and supplies only a small local demand. The coal bed is four feet thick and about 14 feet of very hard clay has to be removed before the coal is exposed. About 11 feet of this clay has to be blasted. Some water is encountered which is removed by means of a small gas driven pump. This mine was inspected February 2, 1918.

56. MILLER COAL MINE.

The Miller Coal Mine which is situated three miles southwest of New Liepzig, is owned and operated by Lawrence Miller of Bentley. The coal bed is four feet thick and is operated as a surface mine, the removal of about 10 feet of clay being necessary before the coal is exposed. The mine is dry. Only a small local demand is supplied. It was inspected February 4, 1918.

57. PATZER COAL MINE.

The Patzer Coal Mine, which is situated two and one-half miles southwest of New Leipzig, was opened during the fall of 1917. It is owned and operated by Adam Patzer. The coal bed is six feet thick and reached by a drift driven into the bank of the Cannonball River. The tipple is provided with a chute for loading coal into wagons. The cars are hauled from the mine by hand. No coal is left in the roof and two rows of props are placed in the rooms. Ventilation is secured by means of an air shaft and no water is encountered. This mine was inspected February 4, 1918 and found in good condition.

58. ROCK COAL MINE.

The Rock Coal Mine, which is located about three miles southwest of Heil, is owned by Ray E. Rock and operated as a strip pit. The coal bed is about six feet in thickness, the top two and a half feet of which is slack, and it is stripped with a gas tractor and an Erie grader. About eight feet of clay has to be removed before the coal is exposed. A small

amount of water is encountered which is dipped from the mine with buckets. Only a small local demand is supplied. The mine was found badly drifted when inspected February 2, 1918.

59. WOLFORD COAL MINE.

The Wolford Coal Mine, owned and operated by Wm. W. Wolford, is a surface mine situated four miles northeast of Elgin. Sixteen feet of clay has to be removed before the seven foot bed of coal is exposed and the stripping is done during the summer months. Water is encountered which is removed by a pump. Only a local demand is supplied. This mine was reported February 5, 1918.

HETTINGER COUNTY.

60. ALBRECHT COAL MINE.

The Albrecht Coal Mine which is situated about six miles northwest of Havelock is owned and operated by C. A. Albrecht, who operates it as a surface mine. The coal bed is six and a half feet thick and from six to 12 feet of clay must be removed. Water is drained from the mine by a ditch. A large local demand is supplied. This mine was reported March 9, 1918.

61. ARNOLD COAL MINE.

The Arnold Coal Mine, owner by Charles T. Arnold and operated by John Wienandy, is situated about one and three-fourths miles northwest of Coalbank. The coal bed is 14 feet thick and reached by a drift driven into the bank of Coalbank Creek. From five to six feet of coal is left for a roof, one row of props is placed in the rooms and the entry is well timbered. The coal is hauled from the mine by horse power where a tipple is provided for loading the coal into wagons. A storage bin of 100 tons capacity is also located at the mine. The mine is dry and ventilation is secured through an old drift. Conditions were satisfactory January 31, 1918.

62. BILLMAN COAL MINE.

The Billman Coal Mine, situated four miles west of Regent, is a small surface mine supplying a small local trade. It is owned by Winger and Hagen and operated by A. D. Billman. The coal bed is four and a half feet thick and four feet of clay must be removed. Some water is pumped from the mine. The foregoing report was made March 9, 1918.

63. CULVER COAL MINE.

The Culver Coal Mine, located nine and one-half miles south of New England, is owned by Chas. C. Culver and leased by V. Arnold. The coal bed is about eight feet in thickness and is mined by stripping, the removal of about 10 feet of dirt being necessary before the coal is exposed. Some underground mining has been done in previous years, but this method has been abandoned. A very small amount of water is encountered. A local demand is supplied. This mine was inspected January 30, 1918.

64. DAVIS COAL MINE.

The Davis Coal Mine is owned by Charles A. Davis and leased and operated by W. H. Murphy. It is situated one mile southwest of Regent

and is worked as a surface mine. The coal bed is six feet thick and about 20 feet of clay has to be removed before the coal is exposed. No water is encountered. Only a small local demand is supplied. The mine was inspected January 31, 1918.

65. HAVELOCK COAL MINE.

The Havelock Coal Mine, located one mile northeast of Havelock, is owned by Mrs. E. W. Adams of Northfield, Minn., and leased by John Adams of Havelock. The coal bed is 11 feet in thickness and reached by a drift driven into the coal from the side of a steep bluff bordering the Cannonball River. A new entry which was being driven had been extended about 100 feet and from this a couple of rooms were being driven. Timbering is done in the entry where necessary, and a row of props is placed in the rooms. The coal is handled underground and hauled to the surface by horse power where it is dumped into a chute and loaded into wagons or sleighs. The mine was inspected January 31, 1918.

66. KALLIS COAL MINE.

The Kallis Mine, situated three miles northwest of Odessa, is owned by Kallis Bros. who operate it as a surface mine. The coal bed is seven and a half feet thick and from 10 to 20 feet of clay must be removed. Some water is encountered which is drained from the mine by ditch. When the mine was inspected February 4, 1918, an entry was being driven. The owners intend to operate it as an underground mine. A small local demand is supplied.

67. KUNZE COAL MINE.

The Kunze Coal Mine, situated four and a half miles east of Havelock, is owned by H. O. Kunze, and leased and operated by Geo. Wilhelm. The coal bed is 14 feet thick and reached by a drift driven into the bank of Coalbank Creek. Four feet of coal is left for a roof and one row of props is placed in the rooms. Water is encountered which is removed by means of a gas driven pump and ventilation is secured by means of an air shaft. The coal is hauled from the mine to the tipple by horse power. A spur on the Milwaukee Railroad is situated a short distance from the mine, where the coal is hauled and loaded into cars. The mine buildings consist of a boarding house, a dwelling, a barn, and an office. This mine was inspected January 31, 1918 and found in satisfactory condition.

68. MERRY COAL MINE.

The Merry coal Mine, owned and operated by C. H. Merry, is situated 12 miles south of Mott. The coal vein is 10 feet thick and worked as a surface mine, the removal of from 10 to 30 feet of clay being necessary. Some water is ditched from the mine. Only a local demand is supplied. The foregoing facts were reported January 1, 1918.

69. NELSON COAL MINE.

W. H. Brown & Co. own the Nelson Coal Mine, but it is leased and operated by Mons Nelson who operates it as a surface mine. From four to five feet of clay must be removed. Water is removed from the mine

by means of a gas driven pump. A local demand is supplied. The foregoing report was made December 26, 1917.

70. RUMPH COAL MINE.

The Rumph Coal Mine, located six miles southeast of Mott, is owned and operated by C. W. Rumph. The mine is worked as a surface mine, the removal of about 18 feet of clay being necessary before the five to six foot bed of coal is exposed. Water is pumped from the mine by a gas driven centrifugal pump. Most of the coal mined is hauled to the city of Mott. The foregoing report was made February 4, 1918.

71. SADLER COAL MINE.

The Sadler Coal Mine which is located on a spur of the Milwaukee Railroad at Coalbank, is owned by the Sadler Coal Mining Company of Mollett, South Dakota. The coal bed is 11 feet thick and reached by a slope, through which the cars are hauled to the tipple by means of a steam hoist. The tipple has one chute for loading cars and one for local trade. About one foot of coal is left for a roof and one row of props is placed in the rooms. Very little water is encountered in the mine. Ventilation is secured by means of an air shaft and canvass brattices are placed where necessary. The buildings consist of a tipple, a power house, a blacksmith shop, an office, a boarding house, a dwelling, a powder magazine, a barn, and a store room. This is one of the new mines opened in the fall of 1917 and when inspected January 31, 1918, it was found in good condition.

72. SQUARE DEAL COAL MINE.

The Square Deal Coal Mine which is located two and one-half miles south of Bentley, is owned and operated by Crary Bros. The coal bed is from four to five and a half feet thick and the mine is operated as a surface mine. From three to eight feet of clay has to be removed. Water is ditched from the mine. Most of the coal from this mine is hauled to Bentley and shipped. It was inspected February 4, 1918.

73. SWITZER COAL MINE.

The Switzer Coal Mine, situated two and three-quarters miles west of Regent, is owned and operated by Presley Switzer. The coal bed is nine feet thick and worked by stripping, although some coal is taken from underneath the clay bank. Very little water is found in this mine. It was inspected January 31, 1918.

74. UTTER COAL MINE.

Joseph Utter owns the Utter Coal Mine, situated three and a half miles northwest of Odessa, and operates it as a surface mine. The coal bed is six and a half feet thick and from six to 15 feet of clay has to be removed before the coal is exposed. Very little water is encountered. This mine supplies a small local demand. It was inspected February 4, 1918.

McLEAN COUNTY.

75. BITUMINA COAL MINE.

The Bitumina Coal Mine, owned by John Satterlund but leased and operated by Ed. Kugler, is located seven miles northwest of Washburn.

The coal bed is from nine and a half to eleven feet thick. A drift leads from a coulee into the coal bed where the coal is hauled from the mine by horse power. From the mouth of the mine the coal is hoisted to a tipple with a steam hoisting engine. The tipple is provided with two chutes for loading the coal into wagons. A storage bin is also situated at the tipple, having a capacity of about 400 tons. A Norwalk air compresser and a Jeffrey undercutter machine are used. About three feet of coal is left for a roof and and very little timbering is done. A Morgan-Gardner steam pump is used to remove the water from the mine. Ventilation is secured by means of an air shaft and in the rooms compressed air is used. The mine buildings consist of an office and scale room, a power plant, a tipple and storage bin, a powder magazine, a blacksmith shop, two dwellings and a barn. At this mine is located the power plant of the Central Electric Light and Power Company which furnishes light and power to the towns of Washburn, Underwood, and Turtle Lake. A large portion of the coal mined here is hauled to the siding at Bitumina and shipped. This mine was inspected February 21, 1918 and found in satisfactory condition.

76. BORCHARDT COAL MINE.

E. G. Borchart owns and operate the Borchardt Coal Mine which is situated three miles south of Underwood. The coal bed is 12 feet thick and reached by a 38 foot two compartment shaft. The upper half of this shaft has been lined with concrete. This shaft is driven inside of a barn and the coal is hoisted by means of a whim. Four feet of coal is left for a roof and very little timbering is done. Ventilation is secured by means of an air shaft and a gas-driven fan. No water is encountered in the mine. A small local demand is supplied. The mine was inspected February 22, 1918 and found in satisfactory condition.

77. ELM POINT COAL MINE.

The Elm Point Coal Mine is owned and operated by the Elm Point Mining Company of Harvey and is situated just across the Missouri River from Stanton. The coal bed is eight feet thick, all of which is mined. Considerable timbering is done in order to hold the clay roof. A chute is provided for loading the coal into wagons and a storage bin of 150 tons capacity is situated by the tipple. The mine is dry and ventilation is secured by means of an air shaft situated in an old workings. The mine buildings consist of an office and scale rooms, a dwelling and a barn. Conditions were found satisfactory February 25, 1918.

78. FJELDDAL COAL MINE.

The Fjelddal Coal Mine which is owned by Tom Fjelddal but leased and operated by Fred Wagner, is situated four and a half miles northeast of Underwood. The coal vein is 11 feet thick and reached by a slope. From three to four feet of coal is left for a roof and very little timbering is done. The mine is dry and ventilation is secured by means of an air shaft. The tipple is provided with a chute for loading the coal into wagons. The mine buildings consist of an office, a dwelling and a barn. The mine was inspected February 23, 1918 and found in satisfactory condition.

79. FREDERICH COAL MINE.

The Frederich Coal Mine, situated four and a half miles northeast of Underwood, is owned by Wm. Frederich and leased and operated by Henry Frederich. A shaft 59 feet in depth leads to the coal, and the coal bed is six feet thick with no coal left in the roof. An air shaft and gas-driven fan furnish ventilation and no water is encountered in the mine. The coal is hoisted from the mine by means of a whim and is then dumped into a chute and loaded into wagons. No timbering has been done in the shaft. This mine was inspected February 23, 1918.

80. GARRISON COAL MINE.

The Garrison Coal Mine, owned and operated by the Garrison Coal Light and Power Company, is located within a half mile of the city of Garrison. The coal, which is seven feet in thickness, occurs at a depth of about 50 feet. Two Morgan-Gardner electric undercutting machines are in use. An electric pump is used to keep the mine dry. The coal is hoisted up the slope with a steam hoist. Ventilation is secured by means of an air shaft with an electric fan, and on the date of inspection the ventilating apparatus was delivering 3,850 cubic feet of air. Fubruary 22, 1918 conditions in and about the mine were first-class.

81. HANSON COAL MINE.

The Hanson Coal Mine, owned by Peter Hanson but leased and operated by August Marks, is situated four and a half miles east of Underwood. The coal bed is 11 feet thick and reached by a slope. The coal is hauled from the mine to the tipple by horse power where it is loaded into wagons. From three to four feet of coal is left for a roof and very little timbering is done. No water is encountered in this mine and ventilation is secured by means of an air shaft. The mine buildings consist of a dwelling, a bunk house, a barn and a boarding house. Conditions were found satisfactory on February 23, 1918.

82. JOHNSON COAL MINE.

The Johnson Coal Mine, situated seven miles east of Garrison, is owned and operated by Swan A. Johnson. The coal bed is seven feet thick and is reached by a slope. About eight inches of coal is left for a roof and from two to three rows of props are placed in the rooms. Some water is encountered in the mine which is removed by means of a wind mill and well pump. An air shaft provides ventilation. The coal is hauled from the mine by a team and a cable. The owner's farm buildings are situated by the mine. Only a local demand is supplied. The mine was inspected February 26, 1918 and found in satisfactory condition.

83. KOENIG COAL MINE.

The Koenig Coal Mine, situated about three miles southeast of Underwood, is owned by Johannes Koenig and operated by Adolf Scheller, as a surface mine. The coal bed is from eight to ten feet thick and about 16 feet of clay has to be removed. Water is encountered in the mine which is drained through a sewer. Only a small local demand is supplied. The foregoing facts were reported March 15, 1918.

84. PFISTER COAL MINE.

Fred Pfister owns and operates the Pfister Coal Mine which is situ-

ated about 10 miles northwest of Washburn. The coal bed is eight feet thick and reached by a drift. About one foot of coal is left for a roof. Water is ditched from the mine and no means of ventilation is provided. The coal is hauled from the mine by horse power and dumped through a chute into wagons. A small dwelling and barn are situated at the mine. Inspected February 22, 1918.

The Rupp Coal Mine is operated By E. R. Rupp and is situated about three miles southwest of Garrison. The coal bed is from seven to seven and a half foot thick and entered by a drift driven from the face of an old strip mine. Eight inches of coal is left for a roof and two rows of props are placed in the rooms. No water is encountered and ventilation is secured through a caved-in room. A wagon scales is provided at the mine. The mine buildings consist of a dwelling, a bunk house, and a barn. The mine was inspected February 26, 1918 and found in a satisfactory condition.

86. SEIBEL COAL MINE.

The Seibel Coal Mine, owned and operated by Frank Seibel, is situated three miles southwest of Garrison and operated as a surface mine. The coal bed is six feet thick and about nine feet of clay must be removed. Water is ditched from the mine. When inspected February 26, 1918 double entries were being driven into the coal, as the operator intends to work this as an underground mine from now on. The entries had been driven about 50 feet. In this mine was found the dangerous practice so often found in surface mines, of undermining the bank and using very few timbers. It was inspected February 26, 1918.

87. ULRICH COAL MINE.

The Ulrich Coal Mine, formerly operated by Ulrich, Lauser and Kingsley, was abandoned in March, 1916.

MERCER COUNTY.

88. BEULAH COAL MINE.

The Beulah Coal Mine, owned by the Beulah Coal and Mining Company, is located at Beulah on a spur of the Northern Pacific Railroad. The coal bed which is from 12 to 14 feet thick is reached by a 56 foot shaft. This shaft is a two compartment shaft with a stairway in one compartment and a hoist in the other. From two to three feet of coal is left in the roof and two rows of props are placed in the rooms. Ventilation is secured by means of an air shaft and steam-driven fan. Some water is encountered in the mine which is removed by a steam pump and two eletrically driven pumps. A power house is situated at the mine and all main haulage ways are electric lighted. The Company proposed to install cutting machines and a box car loader. They also intend to open another mine on property about three miles north of the present mine. The coal bed on this northern property is 18 feet thick and a spur will be built to this mine. The mine buildings consist of an office, a power plant, a hotel, a tipple, a powder magazine, a bunk house and a blacksmith shop. A ladder is also provided in the air shaft. The mine was inspected February 12, 1918 and found in good condition.

89. DILGER COAL MINE.

The Dilger Coal Mine, a small mine located three and one-half miles south of Beulah, is owned by John R. Stewart and operated by Lawrence Dilger. The coal bed is 16 feet thick and reached by a drift. Six feet of coal is left in the roof and no timbering is done in the rooms. Water is ditched from the mine. A tipple is provided with chute for loading the coal into wagons. The foregoing facts were reported February 13, 1918.

90. GALLAGHER COAL MINE.

The Gallagher Coal Mine, a small surface mine owned and operated by Jack Gallagher, is situated one mile west of Hazen. The coal bed is four feet thick and from eight to ten feet of clay must be removed. A gas-driven pump removes the water from the mine. Only a small local demand is supplied. The foregoing report was made March 6, 1918.

91. GOLDEN VALLEY COAL MINE.

The Golden Valley Coal Mine is owned and operated by G. S. Davis, and is located two miles northwest of Golden Valley. The coal bed is six feet thick and reached by a drift. No coal is left in the roof and more timbers should be used, as considerable difficulty is experienced in holding it. A box drain is used to carry the water from the mine and no means of ventilation is provided. The coal is loaded from a tipple into wagons. Inspected February 14, 1918.

92. HAVEN COAL MINE.

The Haven Coal Mine, located three miles northwest of Golden Valley, is owned and operated by Lee Haven. A drift driven from the creek bank leads into a six foot bed of coal. No coal is left in the roof and very little timbering is done. A tipple is provided for loading the coal into wagons. No water is encountered in the mine. When inspected February 14, 1918 the entry was found caved and closed almost to the entrance. This entry will not be reopened, the present mining being confined to a side entry closed to the portal.

93. INGOLD COAL MINE.

The Ingold Coal Mine, situated three miles south of Golden Valley, is owned by W. P. Ingold and operated by Tom Figenskan. The coal bed is six feet thick and entered by a drift. A new entry was being driven as the old entry had to be abandoned on account of water. Only a small local demand is supplied. The foregoing report was made February 14, 1918.

94. KEELEY COAL MINE.

The Keeley Coal Mine, owned by Ed. Oster and operated by Ulmer Bros., is situated one and one-half miles north of Hazen. The coal bed is five feet thick and no coal is left in the roof, so considerable timbering is necessary. No artificial means of ventilation is provided, but an air course is to be driven into an old workings to provide circulation. The coal is hauled from the mine by hand to the tipple where it is dumped through a chute into wagons. The mine is dry. Most of the coal mined is used in the power plant of the Hazen Electric Light and Power Com-

pany. Except for inadequate ventilation, the mine was found in satisfactory condition when inspected February 12, 1918.

95. KESLER COAL MINE.

The Kesler Coal Mine, located three miles north of Beulah, is owned by Geo. Kesler but leased and operated by Geo. G. Schmidt. The coal bed is 18 feet thick and entered by a drift from the side of the coulee. About four feet of coal is left in the roof and no timbering is necessary. The coal is hauled from the mine by a horse to dump where it is loaded into wagons. The mine is dry. It was opened in September, 1917, and supplies a local demand. Conditions were satisfactory when inspected February 13, 1918.

96. KOULBERG COAL MINE.

Albert Koulberg owns and operates the Koulberg Coal Mine which is situated three miles south of Hazen. The coal bed is from four and a half to five feet thick and reached by a shaft sunk in the coulee. A horse and cable is used to hoist the coal from the mine and a storage bin is provided. This mine was opened in the early part of 1918 and when inspected February 12th, an entry had been driven about 100 feet and no rooms were turned. Conditions were satisfactory.

97. KREM COAL MINE.

The Krem Coal Mine, situated six and one-half miles north of Hazen, is owned and operated by Richter and Erbele, with David Richter acting as superintendent. The coal bed is 13 feet thick and reached by a 67 foot shaft. The tipple is provided with a chute for loading the coal into wagons and a 60 ton storage bin is placed by the tipple. The coal is hoisted from the mine by means of a 12 H. P. Economy engine. Water is encountered which is removed by a gas driven pump. About six feet of coal is left in the roof and no timbering is done. Ventilation is secured by means of an air shaft. The Krem Coal Mine was formerly located about one mile east of the present mine. The present mine was opened during the summer of 1916, and on February 12, 1918, conditions were found very good.

98. LUCKY STRIKE COAL MINE.

The Lucky Strike Coal Mine is situated three quarters of a mile south of Zap and is operated in a seven and one-half foot bed of coal. It is owned by Slowey, Field and Strope and operated by William Thurston. A slope leads into the coal bed, about one and one-half feet of coal is left in the roof, and two rows of props are placed in the rooms. Ventilation is secured by means of an air shaft and the mine is dry. The coal is hauled from the mine by horse power and a tipple is provided for loading it into wagons. On February 13, 1918 conditions were satisfactory.

99. MYERS COAL MINE.

The Myers Coal Mine, owned by Harold Myers but leased and operated by W. M. Riffle and T. Morris, is a new mine situated two miles northwest of Golden Valley in a coal bed four and one-half feet thick. Due to the thinness of the coal bed very little coal is left in the roof and the mine is well timbered. Ventilation is secured by means of an air shaft and some water is encountered which is removed by means of a box drain. Coal is hauled from the mine by horse power to a dump where

it is loaded into wagons. A dwelling is situated by the mine. When inspected January 14, 1918 this mine was found in first-class condition.

100. OTNESS COAL MINE.

The Otness Coal Mine, situated two miles south of Hazen, is owned and operated by Enoch Otness. The coal bed is four feet thick and reached by a slope. Due to the thinness of the bed no coal is left in the roof and considerable difficulty is experienced in holding it. Water is drained from the mine through a pipe, and no means of ventilation is provided. When the mine was inspected February 12, 1918 it was in fair condition.

101. REICHENGBERG COAL MINE.

Jake Reichengberg owns the Reichengberg Coal Mine and leases it to John Bartell. It is situated one mile north of Hazen and supplies a local demand. Due to the thinness of the bed, which is four feet thick, no coal is left in the roof and considerable timbering is necessary. A chute for loading the coal into wagons and a storage bin are provided. The mine is dry and ventilation is secured through an old entry which affords inadequate circulation. Inspected February 12, 1918.

102. REIGEL COAL MINE.

The Reigel Coal Mine, a new mine opened in the first part of 1918 and situated two and one-half miles northwest of Golden Valley, supplies a small local demand and is owned and operated by J. H. Reigel. The coal bed is six feet thick and reached by a drift. The mine is dry, and when inspected February 14, 1918 the entry was found driven only 50 feet and one room was being worked.

103. STANDARD COAL MINE.

The Standard Coal Mine, located on the outskirts of Beulah, is owned by Geo. G. Schmidt. It was formerly operated in an 11 foot bed of coal but in March 1917 the mine was abandoned on account of water.

104. SCHMIDT COAL MINE.

The Schmidt Coal Mine, situated seven and a half miles northwest of Beulah, is owned and operated by Geo. G. Schmidt. The coal bed is 23 feet thick and reached by a slope through which the coal is hauled to the dump by means of a whim. About five feet of coal is left in the roof and no timbering is done. A windmill and well pump remove the water from the mine. Only a small local demand is supplied. The foregoing facts were reported February 13, 1918.

MORTON COUNTY.

105. COOPENHAVER COAL MINE.

The Coopenhaver Coal Mine which is situated two and a half miles southeast of Flasher, is owned and operated by A. N. Coopenhaver who works it as a surface mine. The coal bed is four and a half feet thick and about 12½ feeet of clay has to be removed before the coal is exposed. This mine has not been in operation since the fall of 1915.

106. ELMER COAL MINE.

The Elmer Coal Mine, a new mine situated four and one-half miles

northeast of Hebron, is owned and operated by Joseph Elmer. Operations were begun on this mine in July, 1917, and at the time it was inspected the entry had been driven about 400 feet and a parallel entry begun. Two rooms were also being driven. The coal bed is about six feet thick and reached by a slope. A chute is provided for loading the coal into wagons, and a scale is to be installed. The mine was inspected February 6, 1918.

107. GARFIELD COAL MINE.

The Garfield Coal Mine, located seven miles north of New Salem and formerly owned by Carl Leuder, is now owned and operated by Halle Kensmann. The coal bed is six feet thick overlaid by about 12 feet of clay. Water is encountered in the mine which is removed by means of a gas-driven pump. Only a local demand is supplied. The foregoing facts were reported Dec. 27, 1917.

108. HARNISCH COAL MINE.

The Harnisch Coal Mine, located four miles north of Hebron, is owned by Harnisch Bros. with Robert Harnisch acting as superintendent. The coal bed is from five and a half to seven feet thick and reaches by a drift. A tipple having a one and one-half inch screen is provided. From one to two feet of coal is left in the roof and the mine is well timbered. An air shaft provides circulation and no water is encountered. The mine was opened in December, 1916, and supplies a large local demand. It was inspected February 6, 1918 and found in good condition.

109. HAYMARSH COAL MINE.

The Haymarsh Coal Mine, located about six and one half miles east of Hebron, is owned by Wm. Gietzer and leased and operated by Simon Reinbold. The coal bed is from nine to ten feet in thickness and reached by a steep slope. Horse power is used to haul the coal from the mine, and there is provided a chute of about four tons capacity, through which the coal passes into wagons. No water is encountered in the mine and ventilation is provided by means of an old room that has caved through to the surface and serves as an air shaft. Only a local demand is supplied. Conditions were found satisfactory when the mine was inspected February 7, 1918.

110. HEBRON COAL MINE.

The Hebron Coal Mine, located five miles north of Hebron, is owned by the Hebron Fire and Pressed Brick Company but leased and operated by F. Bennek. It is connected with the brick plant at Hebron by a narrow gauge track and most of the coal mined is used in the brick plant. The coal bed is eight feet thick and reached by a drift. The coal is hauled from the mine by horses and then is loaded from a dump directly into the small mine cars. The double entry system of mining is followed and ventilation is secured by means of an air shaft and gas-driven fan. One foot of coal is left in the roof, the entries are timbered where necessary and the rooms are well timbered. The mine was inspected February 6, 1918 and found in good condition.

111. KNUTSON COAL MINE.

The Knutson Coal Mine, situated four and one-half miles west of Almont, is owned by C. G. Thor who operates it is a surface mine. The

coal bed is about eight feet thick and about 20 feet of clay must be removed. Water is ditched from the mine. Only a small local demand is supplied. These facts were reported January 1, 1918.

112. KOKOKALER COAL MINE.

The Kokokaler Coal Mine, owned and operated by Henry Kokokaler, is located six miles west of Glen Ullen. This is a small strip pit which supplies a few farmers living adjacent to the mine with coal. The customers do their own stripping and mining and pay fifty cents a ton for the coal. From three to four feet of coal is found.

113. KRAMER COAL MINE.

The Kramer Coal Mine, located three miles northwest of New Salem, is owned and operated by Fred Kramer. The coal bed is seven feet thick and reached by a slope. A gas engine hoist is used to haul the cars from the mine and a tipple is provided with a chute for loading the coal into wagons. About one-half foot of coal is left in the roof. Some timbers are placed in the entry and one row of props is placed in the rooms. No water is encountered and ventilation is secured by means of an air shaft. The mine buildings consist of a scale room, a tipple, a dwelling, and a barn. The mine was inspected February 9, 1918 and found in satisfactory condition.

114. LANGE COAL MINE.

The Lange Coal Mine is a strip pit, owned by Anton Lange and leased and operated by F. C. Lange. It is situated about seven miles northeast of Glen Ullen. The coal bed is about eight feet thick and about eight feet of clay has to be removed before the coal is exposed. Water is encountered which is pumped from the mine by means of a small gas-driven rotary pump. Only a local demand is supplied. The mine was inspected February 8, 1918.

115. LIDSTROM COAL MINE.

The Lidstrom Coal Mine, located about six miles southeast of Glen Ullen, is owned by Mrs. Anna Lidstrom and leased and operated by F. E. Brown. The coal bed is from nine to eleven feet thick and reached by a drift driven into the bank of a deep ravine. A hard shale about 10 inches in thickness overlies the coal and this again is overlaid with a hard sandy clay. Very little timbering is required. Ventilation is secured by means of a breakthru into the old workings where an air shaft is provided. Water is encountered but is piped from the mine. Two chutes which have a capacity of about 20 tons are provided for loading the coal into wagons. Conditions were found satisfactory when the mine was inspected February 8, 1918.

116. NEW SALEM COAL MINE.

The New Salem Coal Mine, owned by R. W. Webb and Company of Minneapolis, is located three-fourths of a mile east of New Salem on a spur of the Northern Pacific Railway. It was formerly leased by M. Tausend, but in August 1916 A. J. Gray, former superintendent, leased the mine and has continued in active charge of the mine. The coal bed is from five and a half to six feet in thickness and occurs at an average depth of 50 feet.

The company formerly owned a power plant which was used in connection with the mine to operate two Morgan-Gardner undercutters and an air fan, as well as to light the important places in the mine. Steam was also used to hoist the coal to the tipple where it was run over screens and loaded into box cars. The mine buildings consist of a tipple, a scale room and office, a blacksmith shop, a boarding house, and a powder magazine.

It is expected that the mine will be completely worked out by the first of April, when it will be abandoned. The power equipment, including boilers, generators, steam hoisting apparatus, and two Morgan-Gardner undercutters, has been sold and is in use at another mine. At present the coal is being hoisted by means of a gas engine.

At present all the work being done in the mine is confined to pulling pillars and stumps. It was thought for a time that the company would open a mine in the 14 foot bed of coal that lies about 200 feet below this one, but this plan has been abandoned. The mine was inspected January 11, 1918.

117. NORTH STAR COAL MINE.

Murry and Haven own the North Star Coal Mine which is located six miles north of Hebron, and have leased it to John Chenoz. The coal bed is about seven and one-half feet thick and reached by a slope. This mine was formerly owned on the opposite side of the coulee, but that location has been abandoned and a new slope driven in the present location. The slope and entry have been driven about 300 feet, off which rooms are being turned. An air shaft is to be driven shortly. The coal is hauled from the mine by horse power and a chute of about four tons capacity is provided for loading the coal into wagons. The mine was inspected March 6, 1918.

118. ORMISTON COAL MINE.

Geo. Ormiston owns and operates the Ormiston Coal Mine which is situated 12 miles southwest of Judson. The coal bed is seven feet thick and reached by a drift. Very little coal is left in the roof and considerable timbering is done. The coal is pushed from the mine by hand and shoveled into wagons. Ventilation is secured by means of an air shaft and water is ditched from the mine. Conditions were satisfactory February 9, 1918.

119. PLEASANT RIDGE COAL MINE.

A. L. Tavis owns the Pleasant Ridge Coal Mine which is located one mile north of Glen Ulen, and leased and operated by Louis Kowoko. The coal bed is about six feet thick and reached by a steep slope through which the coal is hauled to the surface by means of a windlass and horse A chute for loading the coal into wagons is equipped with a two-inch screen. No water of consequence is encountered in the mine, and ventilation is secured by means of an air shaft. A scale for weighing the coal is placed near the mine. Conditions were found satisfactory when it was inspected February 8, 1918.

120. RAMSLAND COAL MINE.

The Ramsland Coal Mine, a surface mine which is situated six miles

west of Almont, is owned and operated by Geo. Reichel. The coal bed is four and one-half feet thick and about 14 feet of clay is removed. Water is encountered which is drained off by means of a ditch. Only a local demand is supplied. This report was made December 24, 1917.

121. WADESON COAL MINE.

The Wadeson Coal Mine, owned and operated by H. D. Wadeson, is situated six miles north of Hebron. A slope is driven into the coal bed which is from five to seven feet thick. A horse is used to haul the coal from the mine. No coal is left in the roof and considerable timbering is necessary. The water is pumped from the mine by a gas engine. Only a small local demand is supplied by this mine. It was inspected February 6, 1918 and found in satisfactory condition.

MOUNTRAIL COUNTY

122. BLAKE COAL MINE.

The Blake Coal Mine, situated seven miles southwest of Stanley, is operated as a strip mine by F. E. Blake. The coal bed is four feet thick and from 10 to 20 feet of clay is removed. Water is encountered in the mine which is ditched off. A local demand is supplied. On March 20, 1918 all the strip coal was found worked out and some underground mining was being done.

123. EVERSON COAL MINE.

The Everson Coal Mine is a small mine located four and one-half miles from White Earth, and is operated during the winter months to supply a local demand.

124. HOPPE COAL MINE.

Herman Moerke owns and operates the Hoppe Coal Mine as a strip pit. It is situated 11 miles northeast of Van Hook. The coal bed is six feet thick and about 15 feet of clay must be removed. Water is ditched from the mine. It was inspected March 21, 1918.

125. KALE COAL MINE.

The Kale Coal Mine, situated seven miles southwest of Stanley, is operated by B. F. Kale as a surface mine. The coal bed is three and one-half feet thick and about 20 feet of over burden has to be removed. Water is ditched from the mine. A small local demand is supplied. Inspected March 20, 1918.

126. PORGER COAL MINE.

The Porger Coal Mine is owned by Geo. Porger and is situated three miles south of White Earth. The coal bed is from six to seven feet thick and reached by a drift. The coal is hauled from the mine by hand to a dump where it is loaded into wagons. No coal is left in the roof and considerable timbering is necessary. The mine is dry and no means of ventilation is provided. Inspected March 19, 1918.

127. RODGERS COAL MINE.

The Rodgers Coal Mine, situated 14 miles southeast of Palermo, is owned and operated by Geo. S. Rodgers. The coal bed is seven feet thick and is mined by stripping, the removal of about 10 feet of clay being necessary. Some water is encountered which is ditched off. This

mine is worked during the fall and winter, supplying a local demand. When inspected March 21, 1918 some underground mining was being done as all the strip coal had been removed.

128. SELLERS COAL MINE.

The Sellers Coal Mine, owned and operated by W. L. Sellers, is situated 11 miles northeast of Van Hook. It is operated as a surface mine and was formerly known as the Roseno Mine. The coal bed is seven feet thick and from six to 20 feet of clay is removed. Water is encountered in the mine which is ditched off. Inspected March 21, 1918.

OLIVER COUNTY

129. BARLOW COAL MINE.

The Barlow Coal Mine is located four and one-half miles west of Fort Clark. It was formerly owned and operated by J. Novak, but in July 1916 D. T. Barlow of Fort Clark purchased the mine and is now operating it as a strip pit. The coal bed is about seven and a half feet thick and about 12 feet of clay has to be removed before the coal is exposed. During the winter of 1916 and 1917 a drift was driven into the bed about 160 feet, from which four rooms were worked. Some water is encountered which is easily drained off by means of a ditch. This mine supplies only a small local demand. Inspected January 8, 1918.

130. MEYHOFF COAL MINE.

The Meyhoff Coal Mine, located three miles south of Center, is a small strip pit owned by Dick Meyhoff of Hannover. The coal bed is 10 feet thick with a four inch parting of clay about three feet from the bottom. No stripping was done during the summer of 1917. About 700 tons of coal was left stripped after the 1916 season was over, of which only a small part was taken out during the year of 1917. When the mine was inspected January 8, 1918 it was not in operation.

131. PLEASANT VALLEY COAL MINE.

The Pleasant Valley Coal Mine, located three miles northwest of Center, is owned by V. R. Boerner of Center, and operated by Wm. Boerner and Wm. Mahlmann. There are two coal beds, a seven foot bed overlying a ten foot bed, with a parting of clay four feet thick between. Where the mine is being worked at the present time about four feet of clay has to be removed before the coal is exposed. Water is encountered which is drained from the mine by means of a ditch. Inspected January 8, 1918.

132. SPRING VALLEY COAL MINE.

The Spring Valley Coal Mine, owned by N. O. Nelson, is located six miles southeast of Center in a bed of coal from five to eight feet in thickness, which has a parting of clay three inches thick about three feet from the bottom of the seam. During 1917 only a small amount of coal was taken from this mine. A few farmers helped strip enough to supply their own winter's fuel. Water is encountered in this mine which is drained off by means of a ditch. As Mr. Nelson has purchased the Tripp Mine he does not intend to operate this mine very much, as a considerable thickness of overburden has to be removed. Inspected January 7, 1918.

133. TRIPP COAL MINE.

The Tripp Coal Mine was formerly owned by M. N. Tripp, but has recently been purchased by N. O. Nelson who operates it as a strip pit. It is located about five miles southeast of Center. The coal seam is from seven to nine feet in thickness and has a parting of clay 10 inches thick about three feet from the bottom. During the summer of 1917 about 4,000 tons of coal was uncovered and about 3,000 tons partially uncovered. Approximately 18 feet of clay has to be removed before the coal is exposed. Water is encountered which is drained off by means of a ditch. Inspected January 7, 1918.

RENVILLE COUNTY

134. TEHELKA COAL MINE.

The Tehelka Coal Mine, which supplies a small local demand during the winter months, is owned by P. P. Tehelka and is situated three and one-half miles north of Carpio. Due to the thinness of the bed, which is three and one-half feet thick, no coal is left for a roof and considerable timbering is necessary. The coal is hauled by horse power from the mine to a dump, where it is loaded into wagons. No means of ventilation is provided and the mine is dry. It was inspected March 4, 1918 and found in satisfactory condition.

135. WHITE ASH COAL MINE.

The White Ash Coal Mine which was opened in the fall of 1917, is situated four and one-half miles northwest of Carpio and is owned by Dorr Carroll of Minot. It is leased and operated by Roy Hopkins. The coal bed is two and one-half feet thick and reached by a drift. Considerable timbering is necessary to hold the clay roof. A chute is provided for loading the coal into wagons and a 40 ton storage bin is placed by the tipple. The mine is dry and no method of ventilation is provided. It was inspected March 4, 1918.

136. WOOSTER COAL MINE.

L. C. Herzeberg leases and operates the Wooster Coal Mine, which is owned by S. J. Rasmussen and is located three miles north of Carpio. A new entry was driven during the fall of 1917. The coal bed is three feet in thickness and is all mined, no coal being left for a roof, so considerable timbering is done. The coal is hauled from the mine by hand and dumped into wagons from an overhead track. No water is encountered. When inspected March 4, 1918 an air course was being driven through to the old entry where an air shaft was located. When this is completed conditions should be satisfactory.

SLOPE COUNTY

137. KRENZ COAL MINE.

The Krenz Coal Mine which is owned by Wm. Krenz of DeSart, is leased by R. Koschnick and is operated to supply a small local demand. It is run in connection with a farm and work about the mine is done at odd times.

This is the only mine of which the department has any record operating in Slope County.

STARK COUNTY

138. GROSS COAL MINE.

The Gross Coal Mine formerly supplied a local demand but at present is being mined only for the owners own coal supply. It is situated three miles northeast of Belfield and owned by Carl Podolanchuk. The coal bed is from six to eight feet thick and entered by a slope. A tipple is provided where the coal is hauled from the mine by horse power. An air shaft provides ventilation and the mine is dry. The foregoing report was made December 22, 1917.

139. HOKOS AND BENEK COAL MINE.

The Hokos and Benek Coal Mine, a new mine opened during the summer of 1917, is situated a short distance west of the Pittsburg mine, about one mile west of Lehigh. It is owned and operated by the Hokos and Benek Coal Mining Company, with J. Hokos as Superintendent. The coal bed is 12½ feet thick and reached by an 8 by 12 shaft. A steam tractor engine is used to hoist the coal from the mine. The entries had been driven about 90 feet and no rooms had been turned. The double entry system of mining is followed. Water is pumped from the mine by means of a steam pump. The tipple is provided with a one inch screen and a storage bin is provided. When visited January 12, 1918 the mine was not being operated and could not be entered on account of water.

140. LEHIGH COAL MINE.

The Lehigh Coal Mine is located at Lehigh on a spur of the Northern Pacific Railway. The Consolidated Coal Company of Dickinson owns the mine and it is operated by James Brody and A. P. Peake, with W. J. Elliot acting as foreman. The coal bed is nine feet thick and is reached by a slope through which the coal is delivered to the tipple by horse power. The company operates its own power plant which furnishes power to operate two Jeffery undercutters and one Christie box car loader. The tipple consists of three chutes, one for loading cars, one for loading wagons, and one for loading slack. The main entry has been driven about a mile and very little water has been encountered; not enough so that it is necessary to install any pumps. Ventilation is secured by means of air shafts. The mine buildings consist of an office, a power plant, a boarding house, a tipple, and a powder magazine. Conditions in and about the mine were satisfactory when it was inspected January 12, 1918.

141. NORTH CREEK COAL MINE.

Deane Wiley owns the North Creek Coal Mine and operates it as a strip pit. It is situated three miles north of South Heart and supplies only a local demand. The coal bed is 20 feet thick and about eight feet of dirt is removed. The foregoing report was made December 28, 1918.

142. NORTH STAR COAL MINE.

The North Star Coal Mine, situated about a quarter of a mile north of Richardton, is owned and operated by John Ostoj. The coal bed is five feet thick and entered by a slope driven from the side of a coulee. A double entry system of mining is followed and the coal is hauled from the mine by horse power. A chute with a one inch screen is provided for

loading the coal into wagons. Due to the thinness of the coal bed, no coal is left in the roof and much timbering is done. An air shaft affords ventilation and the mine is dry. An office and scale room are situated by the mine. This mine was inspected January 16, 1918 and found in good condition.

143. PITTSBURG COAL MINE.

The Pittsburg Coal Mine is located at Pittsburg, five miles east of Dickinson on a spur of the Northern Pacific Railroad. It is owned by the Dakota Lignite Mines Company of Dickinson which also owns the Zenith Mine at Zenith. The mine is situated on the north side of the Heart River and the tipple on the south side. The coal bed is from 10 to 11 feet thick and about three feet of good coal is left for a roof. The main entry has been driven about one-half mile and very little timbering is done in the entries where a substantial amount of coal is left in the roof. The rooms are driven from one to three hundred feet in length, and two or three rows of props are placed in them to support the roof. The coal is hauled by horse power from the mine to the slope where it is hoisted to the tipple by means of a steam hoisting engine. Some water is encountered which is removed with a steam pump, and ventilation is secured by means of a steam driven fan. The tipple is provided with screens over which the coal passes when it is loaded by an Ottumwa box car loader into box cars, or into wagons. The buildings consist of an office, dwellings, a boiler and engine room, a barn, a tipple, and a powder magazine. Conditions in and about the mine were found in a satisfactory condition when it was inspected January 12, 1918.

144. ST. MARY'S COAL MINE.

St. Mary's Coal Mine, owned by St. Mary's Monastery of Richardton, is situated in a coulee one mile northwest of town. The coal bed is five feet and all the coal mined is used in the boiler rooms at the Monastery. The coal is hauled from the mine with a horse and is loaded into wagons from a chute. No coal is left in the roof and much timber is necessary. Water is removed from the mine by means of a gas-driven pump and ventilation is secured through an air shaft. Conditions were found satisfactory on January 16, 1918.

145. ZENITH COAL MINE.

The Dakota Lignite Mines Company of Dickinson owns and operates the Zenith Coal Mine which is situated at Zenith on a spur of the Northern Pacific Railway, with Henry Truelson as Superintendent. The coal bed is from 18 to 20 feet thick and reached by a 1000 foot slope. The single entry system of mining is followed and when the rooms are being driven there is left in the roof from seven to eight feet of coal, which is later recovered. Very little timbering is necessary. Considerable water is ncountered which is removed by means of a Fairbanks-Morse and a Cameron steam pump. Coal is hauled from the mine by means of a steam hoist and the tipple is provided with two chutes for loading the coal into cars. Ventilation is secured by several air shafts. The mine buildings consist of a tipple, a power house, a boiler room, a powder maga-

zine, a bunk house, a boarding house, a barn, and an office. It was inspected January 16, 1918 and found in good condition.

WARD COUNTY

146. BARTOSHIVICH COAL MINE.

The Bartoshivich Coal Mine is situated 10 miles south of Saywer in a deep ravine. It is owned by Mary Bartoshivich, but leased and operated by Joe Bartoshivich. The coal bed is 16 feet thick and entered from the side of the bluff. From six to seven feet of coal is left for a roof and very little timbering is necessary. A dump is provided for loading the coal into wagons. Some water is encountered which is drained off by a ditch, and no artificial means of ventilation is provided. Only a small local demand is supplied. Conditions were found satisfactory when inspected February 27, 1918.

147. BURLINGTON CITY COAL MINE.

The Burlington City Coal Mine, located on the outskirts of Burlington, is owned by Foote and Brunner of Minot, but leased and operated by J. W. Perlechek. The coal bed which is from 10 to 11 feet thick is reached by a slope, and an electric hoist is used to haul the coal from the mine. The double entry system of mining is followed and ventilation is secured by means of an air shaft. Very little water is encountered in the mine. The tipple is provided with a scale room and chute for loading the coal into wagons. Practically all of the coal mined is hauled to the track and shipped. The operator intends to sink a new slope the coming summer about one-half mile west of the present one. Conditions were found satisfactory February 28, 1918.

148. COFLISCH COAL MINE.

The Coflisch Coal Mine, owned by H. E. Christienson, but leased and operated by J. C. Willoughby, is located nine miles south of Sawyer. The coal bed which is 12 feet in thickness is reached by a drift driven from a deep ravine. About four feet of coal is left for a roof and very little timbering is necessary. Some water is found in the mine which is ditched off, and ventilation is secured by means of an air shaft. No means of loading the coal into wagons is provided and it is being dumped into a small bin on the ground. Conditions in the mine were found satisfactory when it was inspected February 27, 1918.

149. CLARK COAL MINE.

The Clark Coal Mine, owned by the Kenmare National Bank, was opened during the fall of 1916. G. V. Clark leases and operates the mine which is situated about two and one-half miles southeast of Kenmare on the east bank of the DeLacs Valley. The coal bed is four feet thick and reached by a slope. A steam threshing engine is used to haul the cars from the mine and a tipple is provided for loading the coal into wagons. No coal is left in the roof and much timbering is necessary. A steam pump is used to remove the water from the mine and ventilation is secured by means of an air shaft. When the mine was inspected March 6, 1918 the air course was found almost closed by a cave-in and the ventilation was slow.

150. COLTON COAL MINE.

The Colton Coal Mine, situated one and a half miles southeast of Burlington, is owned and operated by L. D. Colton. The coal bed which is 10 feet thick is reached by a slope driven from the side of a ravine. A shaft located on top of the bluff is also provided but this is not being used. Considerable water is encountered in the mine which is removed by a gas-driven pump. Ventilation was insufficient as there has been no means provided for circulating the air through the present workings to the air shaft. Coal is hauled from the mine to the tipple by horsepower, where two chutes are provided for loading the coal into wagons. The mine buildings consist of a bunk house, a boarding house, a pump house, and a barn. The mine was inspected March 2, 1918.

151. CONAN COAL MINE.

The Conan Coal Mine, owned by D. A. Conan and leased and operated by J. F. Casteel, is situated one mile east of Burlington. The coal bed is 11 feet thick and reached by a slope. About three feet of coal is left for a roof and two rows of props are placed in the rooms. Ventilation is secured through an old slope and an air shaft in the main entry, but this was not properly bratticed to effect a good circulation. Some water is encountered which is removed in the tank car. A tipple is provided with a chute with a two inch screen, and a scale room. A steam threshing engine is used to haul the cars from the mine. No men are allowed to go in or out of the mine through the haulage ways and the old slope is used as a manway. Except for inadequate ventilation, this mine was found in a satisfactory condition when inspected March 2, 1918.

152. CROSBY COAL MINE.

The Crosby Coal Mine, owned by H. N. Peck but leased and operated by Martin Erickson, is located six miles north of Kenmare on the west bank of the DeLacs Lake. The coal bed which is five and onehalf feet thick is reached by a drift. The coal is hauled from the mine to the tipple by hand where it is dumped into wagons. No coal is left in the roof and three or four rows of props are placed in the rooms. Some water is encountered which is drained from the mine through a wooden pipe, and ventilation is secured by means of an air shaft. The mine buildings consist of a dwelling, a bunk house, a tipple house, and a boarding house. The mine was inspected March 6, 1918 and found in good condition.

153. DAVIS COAL MINE.

The Davis Coal Mine is situated on a spur of the Soo Railroad about one mile south of Burlington. It is owned by the Northern Briquetting Co. and leased and operated by the McMillan Investment Co. of Minot, with M. P. Botsford acting as superintendent. The coal bed is about nine feet thick and reached by an eight hundred foot slope. A large steam hoisting engine is used to haul the coal from the mine to the tipple where it is dumped into chutes leading into box cars or wagons. Chutes are also provided for furnishing coal to the brick plant which is run in connection with the mine during the summer months. Considerable water is encountered which is removed by means of a steam pump. Ventilation

is secured by means of an air shaft and fan, the fan being placed so as to force the air down the slope. The mine buildings consist of a boiler house, a hoist house, an office and store room, a boarding house, ten dwellings, a bunk house, a barn, a fan house, a powder magazine, and a blacksmith shop. Conditions in and about the mine were satisfactory when it was inspected March 1, 1918.

154. DAKOTA COAL COMPANY COAL MINE.

The Dakota Coal Company Mine, located at Vanderwalker, is owned by the McClure Coal Company but leased and operated by the Dakota Coal Company of Tasker. During the spring of 1917 a new slope was driven into the coal at a point north of the old mine. The coal bed is seven feet thick and about two feet of coal is left in the roof. The double entry system is followed and machine mining is done. Some water is encountered in the mine which is removed by an electric pump. Ventilation is secured by means of an air shaft, and during the summer of 1918 an electric fan is to be installed. A tipple is provided with a chute where the coal is screened for loading box cars, and an elevator is provided for loading nut coal into cars. A scale room is also provided on the tipple and the mine buildings consist of a bunk house, an office, a tipple, a barn, a boarding house, nine dwellings, a blacksmith shop, and a powder magazine. A box car loader is to be installed during the summer of 1918. The mine was inspected March 3, 1918 and found in good condition.

155. DIAMOND COAL MINE.

The Diamond Coal Mine, located one mile south of Kenmare, is owned by H. N. Peck, but leased and operated by C. P. O'Neil. The coal bed is five feet thick and reached by a slope. About one-half foot of coal is left in the roof and three rows of props are used in the rooms. No water is encountered and ventilation is secured by means of an air shaft. The coal is hauled from the mine to the tipple by horse power, where it is dumped directly into wagons. When inspected March 7, 1918 the mine was found in good condition.

156. FARMERS' COAL MINE.

The Farmers' Coal Mine, situated seven miles north of Kenmare on the west bank of the DeLacs Lake, is owned by the Farmers' Lignite Coal Company of Bowbells, with O. P. Hanson acting as superintendent. The coal bed is five and one-half feet thick and reached by a long drift. This drift and main entry was driven during the summer of 1917. The stove pipe carried overhead in the entry provides ventilation as it is advanced. No coal is left in the roof and much timbering is necessary. Some water is encountered which is removed by means of a syphon and tank pump. A dump is provided for loading the coal directly into wagons and a storage bin of 80 tons capacity is located by the tipple. The cars are pushed from the mine by hand. The mine buildings consist of a dwelling and a bunk house, a storage bin, and a barn. Conditions were found satisfactory on March 6, 1918.

157. FOXHOLM COAL MINE.

The Foxholm Coal Company, with Mack Hendricks acting as superin-

tendent, owns and operates the Foxholm Coal Mine which is situated one-half mile south of Foxholm. The coal bed is 10 feet thick and reached by a shaft 60 feet deep. This shaft is provided with a separate compartment for a ladder and air course. A Fairbanks and Morris gas hoist engine is used to haul the coal from the mine and a chute with a three-fourths of an inch screen is provided. The double entry system of mining is followed and ventilation is secured by means of the haulage way and air shaft. Considerable water is found in the mine which is removed by a gas-driven pump. The mine buildings consist of a tipple, a power house, a hotel, and an office. Conditions were found satisfactory when the mine was inspected March 4, 1918.

158. HOT BLAST COAL MINE.

The Hot Blast Coal Mine, owned by Mr. Miller, is located three miles northwest of Donnybrook and supplies only a very small local demand. The coal bed is two and one-half feet thick and reached by a short slope driven from the side of the ravine. The slope is so situated that the water from the spring thaw enters the mine. On March 5, 1918 the mine was found full of water and could not be entered.

159. HOUSTON COAL MINE.

The Houston Coal Mine is a new mine owned by Dave Houston and is situated one mile north of Burlington. The slope has been driven only about 150 feet and no rooms have been turned. The coal bed is nine feet thick and from two to three feet of coal is left for a roof in the entry. This mine has not been operated on a commercial scale. Inspected March 2, 1918.

160. HUNNEWELL COAL MINE.

The Hunnewell Coal Mine, situated four and one-half miles southeast of Burlington, is owned and operated by R. J. Hunnewell. The coal is 10 feet thick and reached by a drift. Two chutes are provided where the coal is loaded into wagons. A double entry system of mining is followed and about two feet of coal is left for a roof. Ventilation is secured by means of an air shaft and water is removed from the mine by means of a tank pump and siphon. The mine buildings consist of a dwelling, and a bunk house, and the owner's farm buildings are near by. The mine was inspected March 2, 1918 and found in satisfactory condition.

161. JOHNSON COAL MINE.

The Johnson Coal Mine, owned and operated by Jonas Johnson, is situated about six miles north of Kenmare on the east bank of the DeLacs Lake. The coal bed is from five to five and one-half feet thick and reached by a shaft driven from the bank of the lake. During the winter months the coal is hauled from the drift, loaded into sleighs, and hauled up the lake to the city of Kenmare. No coal is left in the roof and much timbering is necessary. Very little water is encountered in the mine and ventilation is secured by means of the drift and the shaft. A steam hoist is used for hauling the coal to the shaft. The mine buildings consist of a power plant, an office, a dwelling, a bunk house, a barn, a powder house, and a boarding house. During the season of 1918 the present workings are to be abandoned and a new drift will be driven from the lake bank

a short distance up the lake from this mine. Inspected March 6, 1918 and found in good condition.

162. KLONDIKE COAL MINE.

The Klondike Coal Mine, situated five miles northwest of Donnybrook, is owned by William Spencer but leased and operated by L. C. Spencer. The coal bed is three feet thick and due to the thinness of the bed no coal is left in the roof. Much timbering is done in the rooms, while very little is necessary in the entries. Some water is encountered in the mine which is removed by means of a tank car, and an air shaft is to be driven during the season of 1918. The cars are pushed from the mine by hand to a dump where the coal is loaded into wagons. A storage shed with office is placed by the entrance. The present entry was opened during the fall of 1917 and is situated on the opposite side of the coulee from the old mine. When inspected March 5, 1918 the mine was found in satisfactory condition.

163. LARSON COAL MINE.

The Larson Coal Mine, a new mine opened in the fall of 1917, and situated two and one-half miles northwest of Burlington, is owned and operated by Gust Larson. The coal bed is nine feet thick and reached by a drift driven from the bank of a deep coulee. The double entry system is followed and a tipple is provided for loading the coal into wagons. Coal is hauled from the mine by horse power. No water is encountered and an air shaft provides ventilation. The mine buildings consist of a dwelling, a blacksmith shop, a bunk house, and a barn. When inspected March 2, 1918, the mine was found insufficiently timbered.

164. LEESON COAL MINE NO. 1.

Leeson Coal Mine No. 1 is owned by J. J. Leeson and is situated 11 miles southwest of Velva. The coal bed is 12 feet thick and reached by a drift. From three to four feet of coal is left in the roof and very little timbering is necessary. No system of mining is followed. Water is encountered in the mine which is removed by means of a gas-driven pump and ventilation is secured with an air shaft. The coal is hauled from the mine by horse power. The mine buildings consist of a dwelling, a bunk house, a scale room, and a barn. When inspected February 27, 1918 the mine was in a satisfactory condition.

165. LEESON COAL MINE NO. 2.

Leeson Coal Mine No. 2, located nine miles south of Sawyer, is owned by J. J. Leeson of Velva but leased and operated by Christ Martinson. The coal bed is 14 feet thick and from six to seven feet is left for a roof. Due to the stable character of the roof coal, no timbering is necessary. A tipple is provided for loading the coal into wagons. Ventilation is secured by means of an air shaft and water is drained from the mine by a ditch. The coal bed slopes towards the entrance and on February 27, 1918 the ditch was found frozen up and the water backed into the entry so the mine could not be entered.

166. LLOYD COAL MINE.

The Lloyd Coal Mine, owned and operated by the Lloyd Coal Company of Minot, with Roger Lloyd as manager, is situated four and one-half

miles northwest of Burlington. The coal bed is nine feet thick and reached by a slope. A tipple with scales is situated at the siding at Paradise which is connected with the mine by a narrow gauge track one and one-half miles in length. A steam locomotive is used to haul the cars from the mine to the tipple, and a steam hoisting engine is used to haul the coal from the mine. The double entry system of mining is followed and about three feet of coal is left in the roof. Ventilation is secured by means of an air shaft and water is pumped from the mine with a gas engine. During the summer of 1918 the company proposes to install a standard gauge track from Paradise to the mine, in order that the cars may be loaded at the mine. The mine buildings consist of an office and scale room, seven dwellings, a power house and engine house, a bunk house, a boarding house, and a barn. When inspected March 3, 1918 the mine was found in good condition.

167. MELLON COAL MINE.

The Mellon Coal Mine, located two miles south of Kenmare and owned by J. A. Wright, is leased and operated by Peter Mellon. A steep slope is driven to the coal which is four feet thick. Due to the thinness of the coal bed no coal is left in the roof and much timbering is necessary. The coal is hauled from the mine to the dump where it is loaded into wagons. The mine is dry and ventilation is secured by means of an air shaft. The operator intends to drive a new slope during the summer of 1918. When inspected March 6, 1918 the mine was found in satisfactory condition.

168. RICH COAL MINE.

The Rich Coal Mine, owned by R. W. Rich and located seven miles northwest of Kenmare on the west bank of the DeLacs Lake, is leased and operated by John A. Rohe. During the summer of 1916 the old mine was abandoned and in the fall of 1917 a new shaft was sunk 20 feet. The coal is five and one-half feet thick and hoisted from the mine by means of a steam hoisting engine. A tipple is provided with an over head track from which the coal is dumped into wagons. Water is pumped from the mine by a steam driven centrifugal pump. When the mine was inspected March 6, 1918 the entry was found driven 60 feet and no rooms had been turned. Conditions were satisfactory.

169. SEED COAL MINE.

The Seed Coal Mine, opened during the fall of 1917, is situated two miles north of Burlington. It is owned by Dr. F. D. Seed of Minot but is leased and operated by Jake Clementish. The coal bed is about 10 feet thick and reached by a drift which is well timbered. A chute is provided for loading the coal into wagons. No water has been encountered. When inspected March 2, 1918, the entry was found driven about 400 feet and no rooms had been turned.

170. NATIONAL COAL MINE.

The National Briquetting Company owns and operates the National Coal Mine (formerly the Smith Coal Mine) with J. W. Demmy acting as president and superintendent, and C. Tester as pit boss. It is situated two miles north of Kenmare and is connected with the Soo Railroad by a spur. The coal bed is five feet thick and entered by a drift. Due to

the thinness of the bed no coal is left in the roof and about one foot of poor clay is allowed to fall. The double entry system of mining is followed and ventilation is secured by means of an air shaft and fan. The mine is dry. A Morgan-Gardner undercutter is used and an electric motor hauls the coal from the mine to the tipple. The tipple is equipped with an electric driven screen over which the coal passes in being loaded into box cars, where an Ottumwa box car loader is used. The General Electric Company's power plant is located at this mine which furnishes the city of Kenmare with electricity. The mine buildings consist of an office and store room, a tipple, fourteen dwellings, a boarding house, a bunk house, and a barn. When inspected March 6, 1918 the mine was not being operated.

171. SQUARE DEAL COAL MINE.

Stephen Hodgson owns and operates the Square Deal Coal Mine which is located three miles south of Baden and supplies a small local demand. The coal bed is from three and one-half to four feet thick and reached by a drift. No coal is left in the roof and much timbering is done. The coal is hauled from the mine to the dump by a horse and a large storage shed is placed over the entrance. No water is encountered in the mine and no means of ventilation has been provided. A new slope for this mine was driven a short distance south of the old mine during the fall of 1917. An air shaft is to be driven during the summer of 1918. The mine buildings consist of a dwelling, a bunk house, a storage bin, and a barn. Inspected March 5, 1918.

172. SUPERIOR COAL MINE.

The Superior Coal Mine is situated about a quarter of a mile west of the Lloyd Coal Mine. It is a new mine opened during the fall of 1917 and owned and operated by the Superior Coal Company of Burlington. A tipple with scale room is provided and the coal is hauled from the mine by means of a gas engine hoist. The coal bed is about three feet thick and about three feet is left in the roof. An air shaft provides ventilation and water is removed with a gas-driven pump. When the mine was inspected March 2, 1918, the entries were driven only a short distance.

173. TREE-BAUSCH COAL MINE.

The Three-Bausch Coal Mine, a surface mine situated about 14 miles southwest of Velva, is owned by Rufus Tree but leased and operated by Jas. Sells. The coal bed is 14 feet thick and about 16 feet of dirt must be removed. Water is removed from the mine by means of a ditch and a tile drain. When inspected February 27, 1918 some underground work was being done, a couple of rooms having been driven into the coal about 100 feet.

174. VADNAIS COAL MINE.

The Vadnais Coal Mine, situated three and one-half miles southwest of Kenmare on the west bank of the DesLacs Valley, is owned by O. O. Adams but leased and operated by James Harper. The coal bed is from three and one-half to four feet thick and reached by a drift. No coal is left in the roof and two rows of props are placed in the rooms. A chute for loading the coal into wagons is provided and the cars are hauled from

the mine by horse power. The mine is dry and ventilation is secured by means of an air shaft. The main entry was badly caved and a new entry was being driven around this one. The mine buildings consist of a dwelling, a bunk house, and a barn. Inspected March 6, 1918.

175. WALLACE COAL MINE.

The Wallace Coal Mine, situated just south of Burlington, is owned and operated by Mrs. B. Wallace. The coal is 11 feet thick and reached by a drift. The double entry system of mining is followed and ventilation is secured by means of an electric fan. A canvas is used to force the air into entries ahead of the air course. Two feet of coal is left for a roof, from two to three rows of props are placed in the rooms, and the entries are well timbered. Some water is pumped from the mine with an electric driven well pump. A chute is provided for loading the coal in wagons and it is then hauled to the siding and loaded into box cars. The mine buildings consist of an office and scale room, a barn, and four dwellings. When inspected March 1, 1918 the mine was found in satisfactory condition.

176. WOOD COAL MINE.

The Wood Coal Mine, formerly known as the Strong Coal Mine, which is situated 10 miles southwest of Velva, is owned by F. F. Finnegan of Denhoff and leased and operated by Milo G. Wood. The coal bed is 10 feet thick and entered by a drift. A gas engine hoist is used to haul the cars up an incline to the tipple where the coal is dumped through a chute into wagons. About three feet of coal is left for a roof and timbering is done where necessary. Water is removed from the mine by means of a gas-driven pump. Two air shafts are placed in the entries but the present workings are too far ahead of the air for these shafts to be of much account. The operator, however, was driving an air course to the bank which would afford circulation. The mine buildings consist of a dwelling, a bunk house, a hoist house, and a barn. Inspected February 27, 1918.

WILLIAMS COUNTY.

177. AANONSON COAL MINE.

The Aanonson Coal Mine, owned and operated by Thor Aanonson, is situated four and one-half miles southwest of Zahl beside the Freeman Coal Mine. The coal bed, which is seven feet thick, is entered by a drift driven from the side of a creek bank. A tipple is provided for loading the coal into wagons and the cars are pushed from the mine by hand. About one foot of coal is left for a roof and some timbering is necessary. No artificial means of ventilation is provided and water is ditched from the mine. When inspected March 19, 1918 the mine was in satisfactory condition.

178. BLACK BEAUTY COAL MINE.

The Black Beauty Coal Mine, a new mine opened during the fall of 1916, is situated one mile east of Hanks and is owned and operated by Fred Gotham. The coal bed is seven feet thick with about one foot of

coal left for a roof, and is reached by a drift. The coal is hauled by horse power from the mine to the tipple where a chute is provided for loading the coal into wagons. Very little water is encountered and an air shaft provides ventilation. The side entries in this mine were found badly caved on account of being driven too wide. Most of the coal from this mine is hauled to Hanks and loaded into cars. The mine buildings consist of a dwelling, a boarding house, a bunk house, a scale room, a powder house, and a barn. Other than the very wide entries without timbering, this mine was found in satifactory condition when inspected March 19, 1918.

179. BLACK DIAMOND COAL MINE.

The Black Diamond Coal Mine, located three miles southwest of Williston, is owned by J. W. Jackson but leased and operated by N. B. Ludowese, with F. W. Frye acting as superintendent. The coal bed is nine feet thick and reached by a drift driven into the side of a bluff bordering the Missouri River. The double entry system of mining is followed, about two feet of coal is left for a roof and some timbering is done. An air shaft with gas-driven fan furnishes ventilation and the mine is dry. A tipple is provided with two chutes for loading the coal into wagons and small cars. A three mile narrow gauge track connects the mine with Miller Spur, over which the coal is hauled by a three ton Plymouth gas locomotive. A tipple is also provided at the spur for loading the coal into cars. The mine buildings consist of an office and scale room, a dwelling and boarding house, a bunk house, a barn, and a powder magazine. When inspected March 14, 1918 the mine was in a satisfactory condition.

180. BIG FOUR COAL MINE.

The Big Four Coal Mine, situated 24 miles northwest of Williston, is owned and operated by Ben Fedge. The coal bed is seven feet thick and entered by a drift driven from the creek bank. A new drift was driven a short distance from the old mine which has been worked out. About one foot of coal is left in the roof and some timbering is necessary. A horse is used to haul the coal from the mine to the tipple where it is either loaded into wagons or into a 20 ton storage bin. The mine is dry and ventilation is secured by means of an air shaft. Conditions were found satisfactory on March 18, 1918.

181. BRYANT COAL MINE.

The Bryant Coal Mine, situated three and a quarter miles east of Williston, is a new mine owned and operated by F. A. Bryant. The coal bed is eight and one-half feet thick, reached by an 84 foot two compartment shaft with seperate air shaft. Some water is encountered which is removed by a gas-driven pump. When inspected March 16, 1918 the entry at the bottom of the shaft was just being started.

182. BRYNE COAL MINE.

The Bryne Coal Mine, situated about three and one-half miles southeast of Williston, a short distance south of the Black Diamond Mine, is owned by Ole Bryne but leased and operated by Aleck Thompson. The coal bed which is from nine to ten feet thick is reached by a drift driven from the side of a bluff. A tipple with a four inch screen is provided

for loading the coal into wagons. From two to three feet of coal is left for a roof and some timbering is done. Ventilation is secured by an air shaft and the mine is dry. Horse power is used to haul the coal from the mine to the tipple. The mine buildings consist of a bunk house, a boarding house and a barn. Conditions were satisfactory March 14, 1918.

183. EAST ELLITHORPE COAL MINE.

The East Ellithorpe Coal Mine is a new mine in the course of opening. It is situated about two miles east of Williston and is owned by Hanna Pierson, but C. Ellithorpe leases and operates the mine. The coal bed is nine feet thick and reached by a drift. The cars are pushed from the mine by hand to a chute where the coal is loaded into wagons. As yet no rooms have been turned and the entries are driven about 500 feet. A cross entry driven to an old mine a short distance from this mine furnishes ventilation. Very little water is encountered. When inspected March 15, 1918 the mine was found in good condition.

184. ELLITHORPE COAL MINE.

The Ellithorpe Coal Mine, owned and operated by C. Ellithorpe, is situated three miles northeast of Williston. The coal bed is from 9 to 11 feet thick and reached by a drift. A dump with two chutes is provided for loading the coal into wagons and the cars are hauled from the mine by horse power. Water is removed from the mine by means of a siphon and tank pump. From three to four feet of coal is left in the roof and two rows of props are placed in the rooms. An air shaft is provided but is too small to supply an ample circulation. A dwelling having in connection an office, a scale room, a boarding department, a bunk house, a powder house, and a barn are located at the mine. It was inspected March 15, 1918.

185. ERKIE COAL MINE.

The Erkie Coal Mine is a new mine which is being opened by I. L. Erkie. It is situated two and one-half miles southeast of Hanks. The coal bed is eight feet thick and entered by a drift. Water is ditched from the entry which has been driven about 40 feet. When the mine was inspected March 19, 1918, no rooms had been turned and no tipple had been built.

186. FALK COAL MINE.

The Falk Coal Mine, owned and operated by Ole Falk, is situated one and one-half miles east of Hanks. The old mine which was entered by a drift driven from a coulee has been worked out and abandoned and a new slope has been driven on top of the bank a short distance from the coulee. The coal bed is eight feet thick and from one to two feet of coal is left in the roof. The entry has been driven a short distance and a few rooms have been turned. Water is removed from the mine by means of a gas-driven pump and ventilation is secured by an air shaft. A tipple having a scale room and gas engine hoist is provided. Only a local demand is supplied. The mine buildings consist of three dwellings, a barn, an office, and a tipple. When inspected March 19, 1918 the mine was found in satisfactory condition.

187. FOLVOG COAL MINE.

The Folvog Coal Mine, owned by Lucy Dacoteau but leased and operated by H. J. Folvog, is located about five miles south of Grenora. The coal bed is 10 feet thick and reached by a slope. About three feet of coal is left for a roof. Ventilation is secured by means of an air shaft and the mine is dry. A dump with two chutes is provided for loading the coal into wagons. The cars are hauled from the mine by horse power. When the inspection was made in Williams County this mine could not be reached on account of impassable roads and spring floods. The foregoing report was made December 27, 1917.

188. FREEMAN COAL MINE.

The Freeman Coal Mine is located four and one-half miles southeast of Zahl and is owned and operated by Tom J. Freeman. The coal bed is from seven to eight feet thick and reached by a drift driven into the creek bank. A tipple is provided for loading the coal into wagons. Some water is encountered in the mine which is ditched off. No artificial means of ventilation is provided. On March 19, 1918 the mine was not being worked and the snow had melted and run into the entry to such an extent that the mine could not be entered.

189. HAUGEN COAL MINE.

The Haugen Coal Mine, which was opened in December, 1917, is situated one and one-quarter miles south of Hanks, and is owned and operated by Edward E. Haugen. The coal bed is seven feet thick and reached by a drift and the entry had been driven about 73 feet. About one foot of coal is left in the roof and the cars are pushed from the mine by hand. A tipple provides a means of loading the coal into wagons. Water is removed from the mine in a box drain and no artificial means of ventilation is provided. A small dwelling is located at the mine. When inspected March 19, 1918, the mine was found in satisfactory condition.

190. HEAD COAL MINE.

The Head Coal Mine, owned by P. G. Head, is situated five and one-half miles northwest of Williston. The coal bed is from 11 to 15 feet thick and reached by a drift. During the summer of 1916 this drift was driven a short distance north of the old mine. About three feet of coal is left in the roof and much timbering it done. Water is removed from the mine by means of a siphon and an air shaft supplies ventilation. The coal is hauled from the mine by horse power and loaded into wagons from a dump. An office and scale room are located at the mine. When inspected March 17, 1918 the mine was found in a satisfactory condition.

191. HUSEBYE COAL MINE.

The Husebye Coal Mine, formerly owned by J. A. Husebye but now owned and operated by the Williston Coal and Ice Company, is situated three miles east of Williston. The coal bed is 10 feet thick and the double entry system of mining is followed. The coal is reached by a shaft driven from the top of the bluff and also by a drift driven from the side of the bluff. The shaft is used in hoisting the coal from local trade while the drift is used in hauling the coal from the mine to the spur which is connected with the mine by a narrow gauge track. A three ton Plym-

outh gas engine is used to haul the coal from the mine to the tipple at the spur, where it is loaded into cars. A steam hoisting engine is used to haul the coal to the shaft. The tipple at the shaft has two chutes for loading the coal into wagons. A large fan is placed in the air course to force ventilation. A Sullivan electric undercutter is used. The mine buildings consist of an office and scale room, a tipple and engine room, three dwellings, a bunk house, a boarding house, a powder magazine, and a barn. No men are allowed to ride in the cage. When inspected March 15, 1918 the mine was found in good condition.

192. JOHNSON COAL MINE.

The Johnson Coal Mine, situated four and one-half miles southwest of Zahl and owned and operated by John Johnson, supplies a local demand. The coal bed is seven feet thick and reached by a drift. About one foot of coal is left for a roof and much timbering is necessary. An air shaft provides ventilation and water is ditched from the mine. The coal is hauled from the mine to a loading dump by a team hitched to a cable. A dwelling and scale room are located at the mine. When inspected March 19, 1918 the mine was found in good condition.

193. LEIN COAL MINE.

The Lein Coal Mine, owned by O. P. Lein, is located near Hanks and is operated to supply a local demand. The mine is kept open only during the winter months.

194. LOVEJOY COAL MINE.

The Lovejoy Mine, situated one-half mile south of Aboca, is owned and operated by E. F. Lovejoy. A drift driven from the creek bank reaches the coal bed which is 10 feet thick. Two feet of coal is left for a roof and one row of props is placed in the rooms. The coal is hauled from the mine by horse power and loaded into wagons from the tipple. Very little water is encountered in the mine and this is removed by means of a hand pump. The owner intends building a spur from the Northern Pacific Railway to the mine during the summer of 1918 when the coal will be loaded directly into box cars. Conditions were satisfactory March 16, 1918.

195. MILLER COAL MINE.

A. C. Miller owns and operates this mine which is located in a nine foot bed of coal 12 miles north of Williston. Two feet of coal is left in the roof and from two to three rows of props are placed in the rooms. Coal is hauled from the mine by horse power to a dump where it is loaded into wagons. Water is ditched from the mine and no artificial means of ventilation is provided, though the owner expects to drive an air shaft during the summer of 1918. Only a local demand is supplied. When inspected March 18, 1918 this mine was found in a satisfactory condition.

196. MOORMAN COAL MINE.

The Moorman Coal Mine is owned and operated by J. M. Moorman and is situated in a deep coulee seven miles southeast of Wheelock. Two entries are driven into the coal which outcrops in the coulee. About three feet of coal is left in the roof and very little timbering is done. Venti-

lation is secured by means of an air shaft and the mine is dry. The foregoing report was made December 22, 1917.

197. NARVESON COAL MINE.

The Narveson Coal Mine, owned and operated by N. Narveson, is situated four and one-half miles southwest of Zahl. The coal bed is eight and one-half feet thick and reached by a drift driven from the creek bank. About two feet of coal is left in the roof and little timbering is done. A tipple is provided for loading the coal into wagons or the coal is dumped into a 25 ton storage bin. When inspected March 19, 1918 the entry was found caved almost to the entrance. Some work was being done in a room between the entrance and the caved entry and the owner intends to open a new drift during the summer of 1918.

198. NELSON AND ANDERSON COAL MINE.

The Nelson and Anderson Coal Mine, a new mine situated one mile west of Hanks, is owned by James Nelson and Andrew Anderson. The coal bed is eight feet thick and entered by a drift driven into the north bank of the valley. From one to two feet of coal is left in the roof. An air shaft is placed in the main entry for ventilation and the mine is dry. The coal is hauled from the mine by horse power and loaded into wagons from a dump. The mine buildings consist of two dwellings, a storage bin, and a barn. When inspected March 19, 1918 the mine was found in a satisfactory condition.

199. RECLAMATION SERVICE COAL MINE.

The Reclamation Service Coal Mine is situated four and one-half miles northeast of Williston on the west bank of the Little Muddy Creek. It is owned and operated by the U. S. Reclamation Service, with A. B. Innis as pit boss, for the purpose of supplying fuel for their irrigation power plant, which also furnishes power and light for the city of Williston. The coal bed is about 10½ feet thick and reached by a drift. A double entry system of mining is followed and about three and one-half feet of coal is left in the roof. Timbering is done in the rooms and entries where necessary, and the drift and haulage way are very well timbered. An air shaft with an electric fan furnishes ventilation. A small amount of water is encountered in the mine which is removed by means of a tank car. The coal is hauled from the mine by a mule and is dumped into a crusher where the coal is crushed and carried to the boiler room in the power plant by means of an endless chain carrier. No coal is sold except to employees. The mine buildings consist of a dwelling, a power plant, a mess house, a wash room, three bunk houses, a powder magazine, an office and scale room, and a barn. When inspected March 15, 1918 the mine was found in good condition.

200. SEABROOK COAL MINE.

The Seabrook Coal Mine, a new mine opened during the summer of 1917, is owned and operated by James Seabrook who formerly operated the Zahl Coal Mine which has been abandoned. The coal bed is seven feet in thickness. A single entry system is followed and the rooms are driven very narrow, thus requiring very little timbering. The coal is hauled from

the mine by hand to a dump where it is loaded into wagons. No artificial means of ventilation is provided and a ditch drains the water from the mine. When inspected March 19, 1918 the mine was found in a satisfactory condition.

201. TODD COAL MINE.

The Todd Coal Mine, owned and operated by D. I. Todd, is situated three miles southeast of Williston. A drift from the side of a bluff leads into the bed of coal, which is from nine to ten feet thick. Horse power is used to haul the coal from the mine and a tipple is provided for loading the coal into wagons. Ventilation is secured by means of an air shaft and the water is pumped from the mine by hand. On March 16, 1918 the mine was found badly caved and in a dangerous condition from the lack of timber.

202. VIZINA COAL MINE.

The Vizina Coal Mine, owned by Mrs. C. S. Vizina, is located seven miles southeast of Williston and is operated by C. S. Vizina. The mine is situated in a ravine which is very difficult to reach. The coal bed which is from 11 to 12 feet in thickness is reached by a drift. About four feet of coal is left for a roof and more timber should be placed in the rooms, though the entries are well timbered. A long chute is used for loading the coal into wagons. As yet no artificial means of ventilation is provided but the operator intends to drive an air shaft during the summer of 1918. Most of the coal mined is hauled to the city of Williston. The mine was inspected March 14, 1918, and when more timbers are placed in the rooms, it will be in a satisfactory condition.