CANADA

# ANALYSIS DIRECTORY OF CANADIAN COALS

Second Edition - 1953

## SUPPLEMENT No. 1 - 1955

By

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MINES BRANCH
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## FOREWORD

The present publication is an interim supplement to the second edition of the *Analysis Directory of Canadian Coals* dated 1953. It has been prepared in order to present the most up to date information available in the records of the Fuels Division on the coals from all those mines which have shown changes since the last regular edition was published.

The analyses used include all samples received up to the end of May, 1955. In view of the fact that from some areas and mines very few samples had been received in the past and, in some cases, no recent analyses were available, a continuous program of sampling Canadian commercial coals at the mines and at points of delivery was inaugurated. The analyses appearing in this supplement have, to a large degree, been modified by the samples obtained as a result of this commercial coal survey.

It should be noted, that for the lower rank (high volatile C bituminous, subbituminous and lignite) coals, the analyses are presented on the "capacity moisture" basis in addition to being given on the "as received" basis. Because of the large variation in moisture of low rank coals between that existing in the natural state in the bed, and that existing in the commercial product, the "capacity moisture" basis allows for a comparison of the proximate analyses and calorific values on a more uniform basis—that is, where the moisture in the coal has been stabilized in an atmosphere at a relative humidity of 97 per cent. In the second edition of the Directory the calorific values on the "capacity moisture" basis were presented for each coal, where applicable, under the subsection "Analyses for Classification". In this supplement, for purposes of clarity, the complete proximate analyses as well as the calorific values have been presented on the "capacity moisture" basis.

The Appendix presents a list of those mines for which data were published in the second edition of the *Analysis Directory of Canadian Coals* but which are now operating under different names or operators or have suspended operation since the publication of the Directory. More complete information concerning all coal mines may be found in Mines Branch publication No. 4-1, "Coal Mines in Canada", published annually by the Mineral Resources Division.

Acknowledgment is due Dr. J. Visman, under whose supervision were collected many of the recent commercial samples from Alberta and Saskatchewan, to W. J. Montgomery and the staff of the Solid Fuels Analytical Laboratories for the analytical work, and to A. J. Reynolds who aided materially in the clerical work involved.

A. IGNATIEFF,
*Chief, Fuels Division,*

OTTAWA, Canada,
June, 1955.

## INTRODUCTION

*Arrangement of Coals*

The analyses of the coals in this Supplement to the *Analysis Directory of Canadian Coals* are arranged according to province from east to west. Within each province, exclusive of Alberta, the coals are arranged either according to county or field, each mine being listed alphabetically within its own division. In Alberta the coals are arranged according to the areas described in Report No. 12, the Fifth Annual Report of the Scientific and Industrial Research Council of Alberta, 1924, page 44, and as legalized by the Coal Sales Act, 1925, Statutes of Alberta, 1925, Chap. 21, assented to April 10, 1925, and accepted by the Federal Mines Branch. The areas are arranged alphabetically, irrespective of geological formation and the coal mines are arranged alphabetically within each area. In Alberta the legalized mine number of each mine is given, whereas in other provinces the lease number where available, is noted.

*Source of Analyses and Basis of Presentation*

The analyses used in compiling this supplement to the *Analysis Directory of Canadian Coals* were, with some exceptions those to be found in the records of the Fuels Division. Recent analyses for commercial coal from two mines in Alberta were supplied by the Mines Division, Department of Mines and Minerals of Alberta. The various analyses calculated to the dry basis were carefully selected, weighted and averaged. Where recent samples were significantly different than the older samples, and if sufficient analyses were available, the older analyses were omitted. Such significant changes might be due to operation in different seams or the introduction of improved preparation methods. The moisture content representing delivered coal, or as it would be received by the consumer, was designated or adjusted for each size of the various coals according to data available, and the average analyses were then calculated to these adjusted moisture values.

Although the analyses, as a whole, are presented on the basis of what is considered to be a reasonable delivered moisture content, for the lower rank, high moisture coals from high volatile C bituminous to lignite, the proximate analyses and calorific values are also presented on the "capacity moisture" basis. "Capacity moisture" is considered to be the natural bed moisture excluding any visible (extraneous) water on the surface of the coal, and has been defined as the least moisture remaining in the coal when brought to a standard condition of moisture equilibrium at a relative humidity of 97 per cent, at 30°C.(1) The capacity moisture data used in this supplement are averages of the most recent values for each coal available in the Fuels Division records.

The analyses on the "capacity moisture" basis have been included to enable various Government departments and others to compare the value (cost per million B.t.u.) of lower rank high moisture coals on this basis instead of on the partially air-dried ("as delivered") basis which may yield a variable moisture value.

(1) Stanfield, E. and Gilbart, K.C. "Moisture Determination for Coal Classification" Trans. Am. Inst. Min. Met. Coal Division, p. 125 (1932).

*Methods of Analyses*

The methods used for obtaining the proximate and ultimate analyses, calorific values, and ash softening temperature of coals in these laboratories are those outlined in the *A.S.T.M. Standards on Coal and Coke,* or by some slight modification of them.

In reporting the ultimate analyses of the coal on the moist basis, contrary to usual practice, the moisture of the coal has not been included with the hydrogen and oxygen of the dry coal substance, as it is not considered to be part of the ultimate elementary composition of the coal. Reporting the ultimate analysis in this manner facilitates the calculation of the elementary composition of the coal to the dry or any moist basis.

For determining the caking index, the method developed by Gray[2], in which 25 gramme mixtures of coal and sand in varying proportions are carbonized in crucibles at 950°C., has been adopted as a standard at the Fuel Research Laboratories. The ratio of sand to coal, the mixture of which, on carbonization, will form a sufficiently strong button to support a weight of 500 grammes, is designated as the caking index. The higher the indices the greater are the caking properties.

Another important characteristic of bituminous coal is its swelling power on carbonization. One swelling index[3] test used for evaluating this property was developed at these laboratories and is designated as the F.R.L. swelling index test in contradistinction to the "free-swelling index" test designated in the A.S.T.M. Standards as D720—46. The F.R.L. test consists of determining the percentage swelling of the coke button and volatile matter evolved on carbonizing 1 gramme quantities of pulverized coal at 600°C. From these data the swelling index is calculated. The swelling index is also valuable in evaluating coking coals for their suitability in different types of combustion equipment. In the A.S.T.M. free-swelling index test, the coke button resulting from carbonization in a quartz crucible, is compared to a standard series of profiles with increasing indices from 1 to 9 as the button increases in size.

Where analyses of briquettes are involved, certain other pertinent physical properties are given, such as resistance to handling as indicated by the results of a standardized "tumbler test" and the "shatter test".

The tumbler or ball mill test consists of tumbling, for half an hour at 40 r.p.m., approximately 1000 grammes of briquettes in a laboratory ball mill jar fitted with iron frames from which strips, acting as lifters, project about $1\frac{1}{4}$ inches from the walls of the jar. For the average size briquette over $1\frac{1}{2}$ inches, the resulting shattered and abraded product is then screened over 1-inch square-hole and 10-mesh screens, the percentage remaining on the 1-inch screen, called stability index, giving an indication of the resistance to shattering on handling, while the percentage of material passing the 10-mesh screen gives a comparative, although exaggerated, value for the dust produced as a result of abrasion. For a reasonably good domestic-type briquette, a stability index over 90 per cent and an abradability of less than 10 per cent should be expected. Although insufficient data are available for railway-type briquettes, those on the market so far have a stability index of about 80 per cent.

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(2) Gray, Thomas: "The Determination of the Caking Power of Coal"—Fuel in Science and Practice, Vol. 2, p. 42, 1923.

(3) Strong, R.A., Burrough, E.J., and Swartzman, E.: "A Laboratory Test on Coals for Predicting the Physical Properties of the Resultant By-Product Coke"—Canada, Mines Br. Pub. No. 737-2, 1933.

The shatter test consists of dropping a 50-pound sample of the briquettes four times from a height of 6 feet on to a steel plate. The product is then screened over a $1\frac{1}{2}$-inch round-hole screen and the percentage remaining on the screen is referred to as the shatter index. The fines resulting from the shattering are measured by the screened product passing through a $\frac{1}{2}$-inch round-hole screen. For domestic-type briquettes a shatter index of over 70 per cent, with less than 10 per cent fines, is considered satisfactory, whereas railway-type briquettes on the market show shatter indices of 60 per cent or slightly less, with about 20 per cent of minus $\frac{1}{2}$-inch fines.

*Classification by Rank*

The classification of coals according to rank, which identifies the degree of their maturity, is given both according to the method developed for the American Society for Testing Materials, and by the so-called Specific Volatile Index (S.V.I.) method[4], developed at the Fuels Research Laboratories.

The *A.S.T.M. Classification of Coals by Rank* (Designation D388–38), classifies coals according to their fixed carbon and calorific values calculated to the mineral-matter free basis, the higher rank coals being classified by fixed carbon on the dry basis, whereas the lower rank coals are classified by the calorific value on the moist basis. Agglomerating and weathering properties are used to differentiate between certain adjacent groups in the lower ranks, as indicated in the Table below.

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(4) Burrough, E.J., Swartzman, E., and Strong, R. A.: "Classification of Coals Using the Specific Volatile Index"—Canada, Mines Br. Pub. No. 725–2, 1933.

## CLASSIFICATION OF COALS BY RANK

(A.S.T.M. Designation — D 388-38)

Legend: F.C. = Fixed Carbon
V.M. = Volatile Matter
B.t.u. = British Thermal Units

| Class | Group | Limits of Fixed Carbon or B.t.u., Mineral-Matter-Free Basis | Requisite Physical Properties |
|---|---|---|---|
| I. Anthracite..... | 1. Meta-anthracite | Dry F.C., 98% or more. | |
| | 2. Anthracite | Dry F.C., 92% or more and less than 98%. | |
| | 3. Semianthracite | Dry F.C., 86% or more and less than 92%. | Non-agglomerating.(1) |
| II. Bituminous..... | 1. Low volatile bituminous coal | Dry F.C., 78% or more and less than 86%.(3) | |
| | 2. Medium volatile bituminous coal | Dry F.C., 69% or more and less than 78%.(3) | |
| | 3. High volatile A bituminous coal | Dry F.C., less than 69% and moist (2) B.t.u. 14,000(4) or more.(3) | |
| | 4. High volatile B bituminous coal | Moist B.t.u. 13,000 or more and less than 14,000(3) | |
| | 5. High volatile C bituminous coal | Moist B.t.u. 11,000 or more and less than 13,000(4) | Either agglomerating or non-weathering.(5) |
| III. Subbituminous... | 1. Subbituminous A Coal | Moist B.t.u. 11,000 or more and less than 13,000(4) | Both weathering and non-agglomerating.(5) |
| | 2. Subbituminous B Coal | Moist B t.u. 9,500 or more and less than 11,000(4) | |
| | 3. Subbituminous C Coal | Moist B.t.u. 8,300 or more and less than 9,500(4) | |
| IV. Lignitic..... | 1. Lignite | Moist B.t.u. less than 8,300 | Consolidated. |
| | 2. Brown Coal | Moist B.t.u. less than 8,300 | Unconsolidated. |

(1) If agglomerating, classify in low-volatile group of bituminous class.
(2) Moist B.t.u. refers to coal containing its natural bed moisture but not including visible water on the surface of the coal.
(3) It is recognized that there may be non-caking varieties in each group of the bituminous class.
(4) Coals having 69% or more fixed carbon on the dry, mineral-matter-free basis shall be classified according to fixed carbon, regardless of B.t.u.
(5) There are three varieties of coal in the high volatile C bituminous coal group, namely; Variety 1, agglomerating and non-weathering; Variety 2, agglomerating and weathering; Variety 3, non-agglomerating and non-weathering.

The *Specific Volatile Index Classification* of coals by rank (S.V.I. Classification) is based on the heating value of the volatile matter, the values or indices arranging coals in increasing value from peats to anthracites according to their rank. The index is calculated from the standard analysis of a coal according to the following formula:—

$$\frac{\text{Determined B.t.u.} - (14{,}500 \times \text{weight of F.C.})}{\text{Per cent Volatile Matter}} = \text{S.V.I.}$$

For ordinary purposes the index is calculated on the dry ash-free basis, but for more exact differentiation, especially when the ash content is over 10 per cent and the sulphur over 1·5 per cent the data is calculated on the "unit coal" basis (see A.S.T.M. Designation D 388–38).

In accordance with this classification, coals are arbitrarily divided into the following groups:—

| Group | S.V.I. Limits "Unit Coal" Basis | Volatile Matter Range |
|---|---|---|
| | | % |
| *Lignitic* | | |
| A1. Brown Lignite | 82 — 99 | 40 — 70 |
| A2. Black Lignite | 99 — 125 | 36 — 55 |
| *Subbituminous* | | |
| B. Non-agglomerating | 125 — 150 | 35 — 50 |
| C. Agglomerating | 150 — 160 | 35 — 50 |
| *Bituminous* | | |
| D. Para-bituminous (Pseudo-Gas Coals) | 160 — 165 | 28 — 45 |
| E. Para-bituminous (True Gas Coals) | 165 — 175 | 28 — 40 |
| F, G. Ortho-bituminous | 175 — 190 | 21 — 35 |
| H. Meta-bituminous | 190 — 210 | 21 — 28 |
| I. Semi-bituminous | 210 — 230 | 14 — 24 |
| *Anthracitic* | | |
| J. Semianthracite | 230 — 255 | 9 — 16 |
| K. Anthracite | 255 — 300 | 3 — 10 |

*Size Specification for Canadian Coals*

With a view to facilitating the purchase of coal by government departments the Canadian Government Specifications Board has set up a *Specification for Coal*[5], in which size specifications for bituminous, subbituminous and lignite coals are given, as shown below:—

BITUMINOUS, SUBBITUMINOUS, AND LIGNITE COALS

| Customary Trade Designation | Size (1) Designation Round-hole Screen (inches) | Permissible Size(3) Limits, Round-hole Screen (inches) | | Remarks |
|---|---|---|---|---|
| | | Passing(2) | Retained on(2) | |
| Mine Run | As mined | Variable | $\frac{1}{8}$ ($\frac{1}{16}$) | Purchaser may specify maximum permissible size, in which case not more than 5% of the coal shall be retained on the screen defining the upper size limit, as stated by the vendor. The lower screen limit of $\frac{1}{16}$" shall apply only to the bituminous coals of Alberta and British Columbia in the following districts: Crowsnest, Mountain Park, Nordegg and Cascade. |
| Dock or Pile Run | As lifted from dock or storage pile | Variable | $\frac{1}{8}$ ($\frac{1}{16}$) | |
| Modified Mine, Dock ,or Pile Run | As stated by vendor | Variable | $\frac{1}{8}$ ($\frac{1}{16}$) | |
| Large Lump | Plus 4 | Variable | 4 | Upper size limit shall be stated by vendor. |
| Lump | Plus 1 | Variable | 1 | The purchaser may specify a maximum permissible size, in which case not more than 5% of the coal shall be retained on the screen defining the upper size limit, as stated by the vendor. |
| Egg or Stove | 4 x 2 | 4 | 2 | |
| Nut | 2 x $\frac{3}{4}$ | 2 | $\frac{3}{4}$ | |
| Prepared Stoker | As stated by vendor | Variable. As stated by vendor | Variable. As stated by vendor | Both upper and lower size limits and any special treatment applied to the coal shall be stated by the vendor. |
| Nut Slack | 2 or 1$\frac{1}{2}$ x 0 | 2 or 1$\frac{1}{2}$ | $\frac{1}{16}$ ($\frac{1}{32}$) | The lower screen limits of $\frac{1}{32}$" and $\frac{1}{64}$" for the sizes noted, shall apply only to the bituminous coals of Alberta and British Columbia in the following districts: Crowsnest, Mountain Park, Nordegg and Cascade. |
| Slack | 1 or $\frac{3}{4}$ x 0 | 1 or $\frac{3}{4}$ | $\frac{1}{32}$ ($\frac{1}{64}$) | |
| Fines | $\frac{1}{2}$ x 0 | $\frac{1}{2}$ | none | |

(1) The specification for each size is based on the size as delivered to the consumer and does not necessarily indicate the size or types of the limiting screens used in the original preparation.

(2) Not more than 15 per cent by weight of the coal shall pass the screen defining the lower size limit, and not more than 5 per cent shall be retained on the screen defining the upper size limit.

(3) To take care of the off-size coals, and mixtures of sizes, either the purchaser or vendor may specify other upper and lower size limits than those shown here.

[5] "Specification for Coal, 18-GP-1A, 18 August, 1950"—Canadian Government Specifications Board, National Research Council, Ottawa, Canada (Price 15 cents).

Although the specifications were set up initially for use by Government departments it is hoped that industry as a whole will accept it either in its present form or in some suitable modification. General acceptance of the specifications would lead to standardization of products which would benefit all, producer, sales organizations, consumers, manufacturers of preparation equipment and designers of equipment for utilization.

The specifications are periodically reviewed and if necessary revised. This is being done at present and it is expected that a revision will be forthcoming this year.

*Range in Analyses*

As coal is a heterogenous material it is therefore not necessarily uniform in quality. Disregarding variations in the ultimate organic composition of the coal due to variations in the relative quantities of petrographic constituents, the content of mineral matter (an adulterating inorganic material associated with the coal), has the greatest influence on the quality of the coal, all other characteristics being equal.

The average analysis of any coal presented in this supplement to the directory does not indicate the variation in quality that might or should be expected. Reference should be made to Appendix II of the main second edition of the directory which presents the minimum and maximum as well as the average ash contents, on the dry basis, of practically all the coals listed in the directory. This information enables one to judge whether or not any analysis of a Canadian coal which he may be considering comes within the range upon which the average analysis, listed in the directory, has been based.

*Basis for the Comparison of Cost of Coals*

In comparing the monetary value of coal for any particular heating requirement, if all other characteristics are suitable, the coals may be most satisfactorily and easily compared on the basis of their cost per million B.t.u., all calculations being made on the same basis, that is either 'as received' (containing the moisture as delivered), on the capacity-moisture basis, or dry. Using values on the 'as received' basis, such as those presented in this directory, the calculation is as follows:—

$$\frac{1{,}000{,}000}{\text{B.t.u./lb. (as received)} \times 2000} \times \text{Price of coal in cents per } 2{,}000 \text{ lbs.} = \text{cents per million B.t.u.}$$

These comparative values do not take into consideration thermal efficiency and such factors as difference in cost of ash removal, variations in cost due to freight charges accountable to differences in ash and moisture contents, and so forth.

*Coal Sampling*

An analysis of a coal, no matter how accurately determined in the laboratory, is only representative of the coal if the sample itself is truly representative of the bulk from which it is taken. In view of this and to simplify the method and procedure of sampling, the Canadian Government Specifications Board have issued a *Schedule of Methods of Sampling Coal Deliveries.*[6]

[6] "Schedule of Methods of Sampling Coal Deliveries, 18-GP-4, 18 August, 1950"— Canadian Government Specifications Board, National Research Council, Ottawa, Canada (Price 10 cents).

The basic principle of sampling is to take a sufficiently large gross sample, in increments of suitable size and number, and after intimate mixing reduce it by coning and quartering to a suitable quantity (200 to 400 pounds, depending on size), half of which may be sent to the laboratory for analysis, the other half being retained for referee purposes. The amount of gross sample to be taken varies with the quantity of delivered coal being sampled and the schedule referred to above makes the following simple recommendations for commercial sampling.

| *Amount of Coal Sampled* | *Size of Gross Sample* |
|---|---|
| Under 50 tons | One shovelful (approx. 20 lbs.) per ton of coal. Not less than 1,000 lbs. |
| 50 to 500 tons | One shovelful (approx. 20 lbs.) per ton of coal. That is 1,000 to 10,000 lbs. |
| 500 to 1,000 tons | One shovelful (approx. 20 lbs.) per two tons of coal. That is 5,000 to 10,000 lbs. |

For deliveries over 1,000 tons separate gross samples should be taken for each 1,000 ton delivery.

For details regarding sampling under varying conditions of delivery reference should be made to the above mentioned schedule 18—GP—4.[6]

## GLOSSARY OF ABBREVIATED TERMS

*Screen Sizes*

Rd. or rd. = round hole screen
Sq. or sq. = square hole screen
B. = bar screen
Sl. = slot screen
T. = tyrod screen

*Caking Properties* (by button at 950°C.)

N.A. = non-agglomerate
Ag. or A. = agglomerate
W.A. = weak agglomerate
F. = fair caking
F. to G. = fair to good caking
G. = good caking

| | |
|---|---|
| Province | NOVA SCOTIA |
| Area | **Sydney (Cape Breton County)** |
| Operator | Beaver Coal Co. Ltd. |
| Mine | Beaver |
| Trade name | **BEAVER** |
| Output tons/annum | 15,000 |
| Location of Mine | Broughton |
| Seam | Tracey |

| Size | Mine Run | Lump | Stoker | Slack | Fine Slack |
|---|---|---|---|---|---|
| Screen limits at mine in. | | + 1 sq. | ½ x 1 sq. | 0 x 1 sq. | 0 x ½ sq. |
| No. of samples | 1 | 1 | 1 | 1 | 1 |
| **Chemical Properties** | | | | | |
| *As Received Basis* | | | | | |
| *Proximate Analysis—* | | | | | |
| Moisture % | 3·0 | 2·5 | 2·5 | 3·5 | 3·5 |
| Ash % | 11·6 | 9·9 | 14·6 | 12·5 | 14·6 |
| Volatile matter % | 34·3 | 34·7 | 34·2 | 34·0 | 34·7 |
| Fixed carbon % | 51·1 | 52·9 | 48·7 | 50·0 | 47·2 |
| Calorific value B.t.u./lb. | 12,150 | 12,640 | 11,720 | 11,940 | 11,600 |
| Ash softening temperature °F. | 1970 | 2000 | 2000 | 2040 | 2020 |
| *Ultimate Analysis—* | | | | | |
| Carbon % | | | | | |
| Hydrogen % | | | | | |
| Nitrogen % | | | | | |
| Sulphur % | 5·9 | 5·9 | 6·9 | 6·4 | 6·5 |
| Oxygen % | | | | | |
| *Caking Properties—* | | | | | |
| Volatile matter residue—950°C | | | Poor | | |
| *Swelling Properties—* | | | | | |
| Swelling index (A.S.T.M.) | 4·0 | 4·0 | 2·5 | 2·5 | 3·0 |
| *Classification by Rank—* | | | | | |
| A.S.T.M. | High volatile A bituminous | | | | |
| S.V.I. | 158-Border of Para and Subbituminous | | | | |
| **Physical Properties—** | | | | | |
| Bulk density lb./cu.ft. | | 55·0 | 49·0 | 52·5 | 52·0 |
| cu. ft./ton | | 36·4 | 40·8 | 38·1 | 38·5 |
| Grindability index | | 54 | 59 | 54 | 67 |

| | |
|---|---|
| Province | NOVA SCOTIA |
| Area | **Sydney (Cape Breton County)** |
| Operator | Bras d'Or Coal Co. Ltd. |
| Mine | Franklin (1) (2) |
| Trade name | **BRAS D'OR** |
| Output.....tons/annum | 105,000 |
| Location of Mine | Little Bras d'Or |
| Seam | Upper Jubilee (Sullivan) |

| Size | Lump | Nut | Stoker | Nut Slack, Slack | Fines |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | Plus 1 sq. | 1 x 2 sq. | $\frac{3}{16}$, $\frac{1}{4}$ x 1 sq. | 0 x 1¼, 1 sq. | 0 x ¼ |
| No. of samples | 8 | 1 | 2 | 9 | 1 |
| **Chemical Properties—** | | | | | |
| *As Received Basis* | | | | | |
| *Proximate Analysis—* | | | | | |
| Moisture.....% | 4·0 | 4·0 | 4·0 | 6·0 | 6·0 |
| Ash.....% | 10·7 | 8·3 | 9·3 | 13·0 | 16·2 |
| Volatile matter.....% | 36·7 | 39·0 | 38·3 | 34·0 | 31·7 |
| Fixed carbon.....% | 48·6 | 48·7 | 48·4 | 47·0 | 46·1 |
| Calorific value.....B.t.u./lb. | 12,480 | 12,750 | 12,730 | 11,780 | 11,120 |
| Ash softening temperature.....°F. | 2095 | 2150 | 2065 | 2080 | 2090 |
| *Ultimate Analysis—* | | | | | |
| Carbon.....% | 68·2 | | | | |
| Hydrogen.....% | 4·3 | | | | |
| Nitrogen.....% | 1·3 | | | | |
| Sulphur.....% | 4·5 | 3·7 | 4·2 | 4·5 | 5·0 |
| Oxygen.....% | 7·0 | | | | |
| *Caking Properties—* | | | | | |
| Volatile matter residue—950°C..... | | | Fair | | |
| Caking index (Gray)..... | | | 50 | | |
| *Swelling Properties—* | | | | | |
| Swelling index (A.S.T.M.)..... | 4·0 | 3·5 | 3·5 | 3·5 | 1·0 |
| Swelling index (F.R.L.)..... | | | 145–415 | | |
| *Classification by Rank—* | | | | | |
| A.S.T.M..... | | | High volatile A bituminous | | |
| S.V.I..... | | | 162–Parabituminous | | |
| **Physical Properties—** | | | | | |
| Bulk density.....lb./cu. ft. | 48·6 | 41·5 | 44·8 | 51·0 | 48·3 |
| cu. ft./ton | 41·7 | 48·4 | 44·6 | 39·2 | 41·4 |
| Grindability index..... | 62 | 53 | 60 | 64 | 62 |

**Analyses of Ash—**

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 23·2 | 17·7 | 50·8 | 4·0 | 0·7 | 0·2 | 0·7 | 1·0 | 0·5 | 0·5 | 4·7 |

**Remarks—**

(1) All coal passing the 4½" screen is dry cleaned in an air-sand cleaner.
(2) As practically all the coal now comes from Franklin mine the samples originating from Colonial No. 1 have been omitted.

NOVA SCOTIA

**Sydney (Cape Breton County)**

DOMINION COAL CO. LTD.

Nos. 1B, 4, 12, 16, 18, 20, 25, 26*

**DOMINION**

3,558,000

Glace Bay, New Waterford, Reserve, New Aberdeen
Phalen, Harbour, Gardiner (1)

| Mine Run | Screened Mine Run | Lump | Nut | Stoker | Nut Slack | Slack |
|---|---|---|---|---|---|---|
| | + ¾ rd. | + 1½ sq. | ¾ x 1½ sq | ¼ x ¾ | 0 x 1¼, 1½ | 0 x ¾ |
| 73 | 15 | 64 | 3 | 17 | 87 | 335 |
| 3·3 | 3·0 | 2·5 | 2·5 | 2·5 | 4·0 | 5·5 |
| 9·1 | 9·8 | 8·8 | 7·2 | 8·4 | 9·3 | 10·3 |
| 32·5 | 32·5 | 33·8 | 35·1 | 34·6 | 31·6 | 30·7 |
| 55·1 | 54·7 | 54·9 | 55·2 | 54·5 | 55·1 | 53·5 |
| 13,310 | 13,220 | 13,460 | 13,790 | 13,470 | 13,120 | 12,640 |
| 2065 | 1995 | 2080 | 2120 | 2080 | 2065 | 2065 |
| 73·5 | | | | | | |
| 4·8 | | | | | | |
| 1·4 | | | | | | |
| 3·1 | 3·6 | 2·9 | 2·7 | 3·4 | 3·1 | 2·8 |
| 4·8 | | | | | | |
| Good | Good | Good | Good | | Fair to Good | |
| 55 | | | | | | |

5·5—9·0
455

High volatile A bituminous
171—Parabituminous

| | | | | | | |
|---|---|---|---|---|---|---|
| 52·7 | 51·0 | 50·3 | 45·0 | 45·5 | 53·5 | 51·2 |
| 37·9 | 39·2 | 39·5 | 44·4 | 43·9 | 37·4 | 39·1 |
| 64 | 68 | 65 | 63 | 66 | 67 | 68 |

ANALYSES OF ASH—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 36·9 | 19·4 | 33·0 | 2·9 | 0·6 | 0·2 | 1·3 | 1·8 | 0·1 | 0·8 | 3·6 |

REMARKS—

* Mines No. 2 (Phalen) and Nos. 11 and 24 (Emery) closed down.

(1) Phalen—Nos. 1B, 4, 16, and 18 (about 4′8″ to 6′ thick)—No. 1B closed June 30, 1955.
Harbour—Nos. 12, 20 and 26 (about 4′6″ to 6′ thick).
Gardiner—No. 25 (about 3′8″ thick).

| | |
|---|---|
| Province | NOVA SCOTIA |
| Area | **Sydney (Cape Breton County)** |
| Operator | Dominion Coal Co. Ltd. |
| Mine | No. 16 |
| Trade name | **DOMINION** |
| Output ..... tons/annum | |
| Location of Mine | New Waterford |
| Seam | Phalen |

| | Lump | Nut | Stoker |
|---|---|---|---|
| Size | | | |
| Screen limits at mine ..... in. | + 1½ sq. | ¾ x 1½ sq. | ¼ x ¾ sq. |
| No. of samples | 1 | 1 | 1 |
| CHEMICAL PROPERTIES— | | | |
| *As Received Basis—* | | | |
| *Proximate Analysis—* | | | |
| Moisture ..... % | 2·0 | 2·0 | 2·0 |
| Ash ..... % | 6·4 | 6·2 | 5·2 |
| Volatile matter ..... % | 33·6 | 33·5 | 34·0 |
| Fixed carbon ..... % | 58·0 | 58·3 | 58·8 |
| Calorific value ..... B.t.u./lb. | 14,010 | 14,170 | 14,230 |
| Ash softening temperature ..... °F. | 2160 | 2130 | 2130 |
| *Ultimate Analysis —* | | | |
| Carbon ..... % | | | |
| Hydrogen ..... % | | | |
| Nitrogen ..... % | | | |
| Sulphur ..... % | 2·1 | 2·5 | 2·5 |
| Oxygen ..... % | | | |
| *Caking Properties—* | | | |
| Volatile matter residue—950°C ..... | Good | Good | Good |
| Caking index (Gray) ..... | | | |
| *Swelling Properties—* | | | |
| Swelling index (A.S.T.M.) ..... | 8·0 | 8·0 | 8·5 |
| *Classification by Rank—* | | | |
| A.S.T.M. ..... | High volatile A bituminous | | |
| S.V.I. ..... | 173—Parabituminous | | |
| PHYSICAL PROPERTIES— | | | |
| Bulk density ..... lb./cu. ft. | 45·3 | 42·3 | 44·5 |
| cu. ft./ton | 44·2 | 47·3 | 44·9 |
| Grindability index ..... | 66 | 67 | 67 |

| NOVA SCOTIA<br>**Sydney (Cape Breton County)** | NOVA SCOTIA<br>**Sydney (Cape Breton County)** |
|---|---|
| DOMINION COAL CO. LTD.<br>Nos. 4, 12 & 20<br>**DOMINION** | FOUR STAR COLLIERIES LTD.<br>FOUR STAR<br>**FOUR STAR** |
| Glace Bay, New Waterford, New Aberdeen | 39,000<br>Broughton |
| Phalen (No. 4), Harbour (Nos. 12 & 20) | Tracey |

| Nut (No. 12) $\frac{3}{4}$ x $1\frac{3}{4}$ sq. | Nut (No. 20) $\frac{3}{4}$ x $1\frac{3}{4}$ sq. | Slack (1) 0 x $1\frac{1}{4}$ sq. | Mine Run | Lump +1, $2\frac{1}{2}$ sq. | Nut 1 x $2\frac{1}{2}$ sq. | Stoker $\frac{3}{16}$ sl. x 1 sq. | Slack 0 x 1 sq. | Fines 0 x $\frac{3}{16}$ sl. |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 3 | 2 | 4 | 14 | 2 |
| 1·5 | 1·5 | 4·5 | 2·5 | 2·5 | 2·5 | 4·0 | 4·0 | 5·0 |
| 5·1 | 10·5 | 8·9 | 12·3 | 8·2 | 9·4 | 10·2 | 13·0 | 14·3 |
| 37·3 | 35·5 | 32·6 | 34·9 | 34·8 | 35·6 | 34·8 | 33·8 | 33·0 |
| 56·1 | 52·5 | 51·0 | 50·3 | 54·5 | 52·5 | 51·0 | 49·2 | 47·7 |
| 14,290 | 13,260 | 13,040 | 12,310 | 12,920 | 12,670 | 12,430 | 11,920 | 11,440 |
| 2100 | 2130 | 2140 | 2130 | 2185 | 2155 | 2050 | 2060 | 2115 |
| | | | | | | 69·3 | 68·4 | |
| | | | | | | 5·1 | 4·5 | |
| | | | | | | 0·9 | 1·1 | |
| 2·1 | 3·6 | 3·3 | 5·8 | 6·2 | 6·5 | 5·6 | 5·7 | 5·6 |
| | | | | | | 4·9 | 3·3 | |
| Fair | Fair | Good | Poor | Poor | Poor | Poor–Fair | Poor | Poor |
| | | | 70 | 69 | | 61 | 54 | 29 |
| 7·0 | 7·0 | 8·0 | 4·5 | 4·0 | 4·0 | 3·5—5·0 | 4·0 | 2·5—4·0 |
| High volatile A butiminous 170—Parabituminous | | | | High volatile A bituminous 159—Border of para and subbituminous | | | | |
| 44·3 | 48·5 | 53·8 | | 51·2 | 49·0 | 46·5 | 50·0 | 48·5 |
| 45·1 | 41·2 | 37·2 | | 39·1 | 40·8 | 43·0 | 40·0 | 41·2 |
| 59 | 64 | 66 | 66 | 57 | 56 | 56 | 66 | 62 |

ANALYSES OF ASH—(Four Star)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 27·5 | 15·2 | 43·0 | 5·2 | 0·6 | 0·1 | 0·3 | 1·5 | 1·2 | 0·7 | 4·0 |

REMARKS—

(1) Nos. 4, 12 and 20.

| | |
|---|---|
| Province | NOVA SCOTIA |
| Area | **Sydney (Cape Breton County)** |
| Operator | Old Sydney Collieries Ltd. |
| Mine | Lloyd's No. 7 (1) |
| Trade name | **LLOYD'S No. 7** |
| Output.....tons/annum | (2) |
| Location of Mine | Alder Point |
| Seam | Lloyd Cove |

| | Lump | Nut Slack |
|---|---|---|
| Size | | |
| Screen limits at mine.....in. | + 1¼* | 0 x 1¼* |
| No. of samples | 1 | 1 |
| Chemical Properties— | | |
| *As Received Basis* | | |
| *Proximate Analysis*— | | |
| Moisture.....% | 5·5 | 6·0 |
| Ash.....% | 13·4 | 11·6 |
| Volatile matter.....% | 34·8 | 34·6 |
| Fixed carbon.....% | 46·3 | 47·8 |
| Calorific value.....B.t.u./lb. | 11,290 | 11,430 |
| Ash softening temperature.....°F. | 2030 | 2000 |
| *Ultimate Analysis*— | | |
| Carbon.....% | | |
| Hydrogen.....% | | |
| Nitrogen.....% | | |
| Sulphur.....% | 5·9 | 5·3 |
| Oxygen.....% | | |
| *Caking Properties*— | | |
| Volatile matter residue—950°C | Poor | Poor |
| Caking index (Gray) | | |
| *Swelling Properties*— | | |
| Swelling index (A.S.T.M.) | 2·0 | 1·0 |
| Swelling index (F.R.L.) | | |
| *Classification by Rank*— | | |
| A.S.T.M. | High volatile B bituminous | |
| S.V.I. | 141—subbituminous (3) | |
| Physical Properties— | | |
| Bulk density.....lb./cu. ft. | 49·0 | 53·0 |
| cu. ft./ton | 40·8 | 37·7 |
| Grindability index | 57 | 63 |

Remarks—

(1) Strip operation.
(2) Small output.
(3) Rank of coal depressed due to oxidation of the coal *in situ*.
* Bar screen.

NOVA SCOTIA
**Sydney (Cape Breton County)**

OLD SYDNEY COLLERIES LTD. (1)
PRINCESS; FLORENCE
**PRINCESS; FLORENCE; OLD SYDNEY**
734,000
Sydney Mines and Florence Harbour

| Mine Run | Lump | Nut | Stoker | Slack, Nut Slack | Fines |
|---|---|---|---|---|---|
| | (2) | $\frac{3}{4}$ x $1\frac{3}{4}$ sq. | $\frac{1}{4}$ x $\frac{3}{4}$ sq. | 0 x $\frac{3}{4}$, $1\frac{1}{2}$ sq. | 0 x $\frac{1}{4}$sq. |
| 5 | 10 | 2 | 2 | 14 | 1 |
| 3·5 | 3·0 | 3·0 | 3·0 | 3·5 | 3·5 |
| 5·2 | 4·8 | 4·0 | 3·6 | 5·8 | 9·4 |
| 36·3 | 36·9 | 39·3 | 38·1 | 35·6 | 34·7 |
| 55·0 | 55·3 | 53·7 | 55·3 | 55·1 | 52·4 |
| 13,610 | 13,960 | 14,020 | 14,150 | 13,660 | 12,950 |
| 2040 | 2075 | 2100 | 2010 | 2110 | 2080 |
| 76·7 | | | | | |
| 5·1 | | | | | |
| 1·5 | | | | | |
| 2·0 | 1·8 | 2·2 | 1·9 | 1·5 | 2·3 |
| 6·0 | | | | | |
| | | | Fair to Good | | |
| 53 | | | | | |
| 7·5-8·5 | 5·5 | 5·0 | 6·5 | 6·5 | 6·0 |
| 280 | | | | | |
| | | | High volatile A bituminous | | |
| | | | 159—Parabituminous | | |
| 55·0 | 47·5 | 43·0 | 42·5 | 49·5 | 49·5 |
| 36·4 | 42·1 | 46·5 | 47·1 | 40·4 | 40·4 |
| | 54 | 56 | 61 | 64 | 61 |

ANALYSES OF ASH—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 29·3 | 15·8 | 40·0 | 5·4 | 0·9 | — | 1·3 | 0·5 | 0·2 | 0·7 | 4·3 |

REMARKS—
(1) Wet washer (Baum-type jig) installed in 1953. All sizes above $\frac{1}{4}$ in. are being cleaned.
(2) Lump: $+\frac{3}{4}$", $+1\frac{1}{2}$", and $+1\frac{3}{4}$" sq.

| | |
|---|---|
| Province | NOVA SCOTIA |
| Area | **Inverness (St. Rose Basin)** |
| Operator | Evans' Coal Mines Ltd. |
| Mine | Evans |
| Trade name | **ST. ROSE** |
| Output tons/annum | 13,000 |
| Location of Mine | St. Rose—12 Mi. N. of Inverness |
| Seam | No. 5 (8 ft. 11 in.) |

| Size | Screened Mine Run | Lump | Nut | Stoker | Slack |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | + ¾ sq. | + 2 sq. | 1¼ x 2 sq. | ¾ x 1¼ sq. | 0 x ¾ sq. |
| No. of samples | 3 | 1 | 1 | 1 | 1 |
| **Chemical Properties—** | | | | | |
| *As Received Basis* | | | | | |
| *Proximate Analysis—* | | | | | |
| Moisture.....% | 5·5 | 5·5 | 5·5 | 5·5 | 8·5 |
| Ash.....% | 10·8 | 8·6 | 9·5 | 9·2 | 8·6 |
| Volatile matter.....% | 35·1 | 37·4 | 36·6 | 37·1 | 36·2 |
| Fixed carbon.....% | 48·6 | 48·5 | 48·4 | 48·2 | 46·7 |
| Calorific value.....B.t.u./lb. | 11,730 | 11,900 | 11,850 | 11,840 | 11,480 |
| Ash softening temperature.....°F. | 2070 | 2050 | 2030 | 2050 | 2040 |
| *Ultimate Analysis—* | | | | | |
| Carbon.....% | 64·8 | | | | |
| Hydrogen.....% | 4·3 | | | | |
| Nitrogen.....% | 1·3 | | | | |
| Sulphur.....% | 6,5 | 6.8 | 6.1 | 6.1 | 5·9 |
| Oxygen.....% | 6·8 | | | | |
| *Capacity Moisture Basis* | | | | | |
| *Proximate Analysis—* | | | | | |
| Capacity moisture.....% | 5·5 | 5·5 | 5·5 | 5·5 | 5·5 |
| Ash.....% | 10·8 | 8·6 | 9·5 | 9·2 | 8·9 |
| Volatile Matter.....% | 35·1 | 37·4 | 36·6 | 37·1 | 37·4 |
| Fixed Carbon.....% | 48·6 | 48·5 | 48·4 | 48·2 | 48·2 |
| Calorific Value.....B.t.u./lb. | 11,730 | 11,900 | 11,850 | 11,840 | 11,860 |
| *Caking Properties—* | | | | | |
| Volatile matter residue—950°C..... | Poor | Poor | Poor | Poor | Poor |
| Caking index (Gray)..... | | | | | |
| *Swelling Properties—* | | | | | |
| Swelling index (A.S.T.M.)..... | | | 0 | | |
| Swelling index (F.R.L.)..... | | | Negative | | |
| *Classification by Rank—* | | | | | |
| A.S.T.M..... | | | High volatile C bituminous | | |
| S.V.I..... | | | 140—Subbituminous | | |
| **Physical Properties—** | | | | | |
| Bulk density.....lb./cu. ft. | 52·0 | 54·5 | 46·0 | 46·0 | 50·0 |
| cu. ft./ton | 38·5 | 36·7 | 43·5 | 43·5 | 40·0 |
| Grindability index..... | 65 | 57 | 57 | 57 | 57 |

| NOVA SCOTIA<br>**Inverness (Inverness Basin)**<br><br>DOUCET, S.J., AND SONS LTD.<br>ROSEBANK No. 2<br><br>14,000<br>Inverside | | NOVA SCOTIA<br>**Inverness (Inverness Basin)**<br><br>MARGAREE STEAMSHIP CO. LTD.<br>MACDONALD No. 3<br>**MACDONALD**<br>34,000 (1)<br>Inverness<br>No. 3 (Approx. 28 in.) | |
|---|---|---|---|
| Lump | Slack | Lump | Slack |
| + $\frac{5}{8}$ rd. | 0 x $\frac{5}{8}$ rd. | + $\frac{3}{4}$ sq. | 0 x $\frac{3}{4}$ sq. |
| 2 | 1 | 1 | 1 |
| 7·5 | 9·0 | 7·5 | 13·0 |
| 14·2 | 16·0 | 10·4 | 14·4 |
| 38·2 | 35·5 | 38·9 | 32·9 |
| 40·1 | 39·5 | 43·2 | 39·7 |
| 10,050 | 9,590 | 10,680 | 9,490 |
| 2140 | 2090 | 2140 | 2040 |
| 7·9 | 6·3 | 6·8 | 5·4 |
| 9·8 | 9·8 | 10·0 | 10·0 |
| 13·9 | 15·9 | 10·2 | 14·9 |
| 37·3 | 35·2 | 37·9 | 34·0 |
| 39·0 | 39·1 | 41·9 | 41·1 |
| 9,800 | 9,510 | 10,390 | 9,820 |
| Agglomerate<br>0 | | Agglomerate<br>0 | |
| Non-agglomerate<br>0 | | 0 | |
| High volatile C bituminous<br>117—Lignitic | | High volatile C bituminous<br>121—Lignitic | |
| 52·4 | 53·0 | 53·0 | 52·0 |
| 38·2 | 37·7 | 37·7 | 38·5 |
| 48 | 54 | 46 | 57 |

ANALYSES OF ASH—(Macdonald)

| | $SiO_3$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 20·7 | 12·0 | 59·3 | 3·4 | 0·3 | 0·03 | 1·2 | 0·7 | 0·2 | 0·5 | 1·2 |

REMARKS—

(1) Output includes a small proportion from Harbour View mine at Port Hood.

| | |
|---|---|
| Province | NOVA SCOTIA |
| Area | **Inverness (Port Hood Basin)** |
| Operator | MARGAREE STEAMSHIP CO. LTD. |
| Mine | HARBOUR VIEW |
| Trade name | |
| Output.....tons/annum | |
| Location of Mine | Harbour View, 1 mi. S. of Port Hood |
| Seam | (6 ft. seam) |

| | | | |
|---|---|---|---|
| Size | Lump | Slack | Slack |
| Screen limits at mine.....in. | + 1¼ sq. | 0 x 1¼ sq. | 0 x ⅜ |
| No. of samples | 2 | 1 | 2 |
| CHEMICAL PROPERTIES— | | | |
| *As Received Basis* | | | |
| *Proximate Analysis*— | | | |
| Moisture.....% | 4·5 | 5·5 | 6·5 |
| Ash.....% | 15·5 | 13·5 | 11·3 |
| Volatile matter.....% | 35·5 | 35·5 | 35·5 |
| Fixed carbon.....% | 44·5 | 44·5 | 46·7 |
| Calorific value.....B.t.u./lb. | 10,940 | 10,870 | 11,400 |
| Ash softening temperature.....°F. | 2010 | 2040 | 2050 |
| *Ultimate Analysis*— | | | |
| Carbon.....% | | | |
| Hydrogen.....% | | | |
| Nitrogen.....% | | | |
| Sulphur.....% | 8·4 | 7·4 | 7·0 |
| Oxygen.....% | | | |
| *Capacity Moisture Basis* | | | |
| *Proximate Analysis*— | | | |
| Capacity moisture.....% | 6·7 | 6·7 | 6·7 |
| Ash.....% | 15·1 | 13·4 | 11·3 |
| Volatile matter.....% | 34·7 | 35·5 | 35·5 |
| Fixed carbon.....% | 43·5 | 44·4 | 46·5 |
| Calorific value.....B.t.u./lb. | 10,680 | 10,850 | 11,380 |
| *Caking Properties*— | | | |
| Volatile matter residue—950°C. | | Poor | |
| Caking index (Gray) | | | |
| *Swelling Properties*— | | | |
| Swelling index (A.S.T.M.) | 1.0 | 1.0 | |
| Swelling index (F.R.L.) | | | |
| *Classification by Rank*— | | | |
| A.S.T.M. | | High volatile C bituminous | |
| S.V.I. | | 137—Subbituminous | |
| PHYSICAL PROPERTIES— | | | |
| Bulk density.....lb./cu. ft. | 50·1 | 55·0 | 46·5 |
| cu. ft./ton | 39·7 | 36·4 | 43·0 |
| Grindability index | 55 | 58 | 58 |

NOVA SCOTIA

**Joggins (Cumberland County)**

GENERAL

(1)

113,000

Joggins, River Hebert

(2)

| Lump | Commercial Slack (4) | Industrial Slack |
|---|---|---|
| (3) | 0, ½ x 1½ sq. | 0 x ⅝, ¾ sq. |
| 17 | 5 | 26 |
| 3·5 | 4·0 | 5·5 |
| 14·9 | 13·9 | 27·3 |
| 34·5 | 35·6 | 29·0 |
| 47·1 | 46·5 | 38·2 |
| 11,630 | 11,760 | 9,420 |
| 2000 | 2085 | 2090 |
| 65·4 | | |
| 4·6 | | |
| 1·8 | | |
| 5·8 | 5·2 | 5·8 |
| 4·0 | | |
| | Fair | |
| | 58 | |
| 2·0–4·0 | 2·5–4·0 | 4·5 |
| | 150–220 | |
| | High volatile A bituminous | |
| | 150—Parabituminous | |
| 53·2 | 48·7 | 54·0 |
| 37·6 | 41·1 | 37·0 |
| 61 | 62 | 67 |

ANALYSES OF ASH (Joggins)—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | Mno | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 40·5 | 18·9 | 22·5 | 6·7 | 1·9 | 0·1 | 1·0 | 2·7 | 0·2 | 0·7 | 5·1 |

REMARKS—

(1) Includes Joggins Coal Co. Ltd. (Bayview No. 8), Fyfe and Taylor (Filor), and Cumberland Fuel and Trading Ltd. (Cochrane).

(2) The Forty Brine and Kimberley are the main seams mined and they vary from about 24 to 34 inches in thickness.

(3) + ¾, 1, 1½, 1½ x 6 in. sq.

(4) This slack is either especially prepared by crushing handpicked lump retained on the 1½ or 2 in. screen, or merely by screening out the 0 x ½ in. fines from the 0 x 1½ in. slack.

| | |
|---|---|
| Province | NOVA SCOTIA |
| Area | **Joggins (Cumberland County)** |
| Operator | Joggins Coal Co. Ltd. (1) |
| Mine | Bayview No. 8 |
| Trade name | **BAYVIEW** |
| Output.....tons/annum | 29,000 |
| Location of Mine | 1 mile north of Joggins |
| Seam | Forty Brine (26·5 in.) |

| | Lump | Special Slack (2) | Slack (3) |
|---|---|---|---|
| Size | | | |
| Screen limits at mine.....in. | + ¾, + 1½, 1½ x 6 sq. | 0 x 1½ sq. | 0 x ⅝, ¾ sq. |
| No. of samples | 15 | 3 | 24 |
| **Chemical Properties—** | | | |
| *As Received Basis—* | | | |
| *Proximate Analysis—* | | | |
| Moisture.....% | 4·0 | 4·0 | 5·5 |
| Ash.....% | 15·2 | 13·7 | 28·0 |
| Volatile matter.....% | 34·4 | 36·6 | 28·9 |
| Fixed carbon.....% | 46·4 | 45·7 | 37·6 |
| Calorific value.....B.t.u./lb. | 11,500 | 11,900 | 9,310 |
| Ash softening temperature.....°F. | 1995 | 2075 | 2090 |
| *Ultimate Analysis—* | | | |
| Carbon.....% | 64·7 | | |
| Hydrogen.....% | 4·6 | | |
| Nitrogen.....% | 1·8 | | |
| Sulphur.....% | 5·8 | 4·9 | 5·9 |
| Oxygen.....% | 3·9 | | |
| *Caking Properties—* | | | |
| Volatile matter residue—950°C | Fair | Fair | Fair |
| Caking index (Gray) | 59 | | |
| *Swelling Properties—* | | | |
| Swelling index (A.S.T.M.) | 3·5-4·0 | 3·5-4·0 | 4·5 |
| Swelling index (F.R.L.) | | 217 | |
| *Classification by Rank—* | | | |
| A.S.T.M. | High volatile A bituminous | | |
| S.V.I. | 150—Parabituminous | | |
| **Physical Properties—** | | | |
| Bulk density.....lb./cu. ft. | 54·0 | 51·0 | 54·0 |
| cu. ft./ton | 37·0 | 39·2 | 37·0 |
| Grindability index | 65 | 66 | 67 |

**Analyses of Ash—(Bayview)**

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 40·5 | 18·9 | 22·5 | 6·7 | 1·9 | 0·1 | 1·0 | 2·7 | 0·2 | 0·7 | 5·1 |

Remarks—

(1) Company is subsidiary of Maritime Coal, Rly. and Power Co. Ltd. Mine opened in 1939.
(2) This "special slack" was prepared by crushing plus 1½ in. handpicked lump. It was marketed under trade name of "Evangeline Slack".
(3) This slack is prepared entirely for the Maccan Power Plant.

| NOVA SCOTIA<br>**Joggins (Cumberland County)** | | | NOVA SCOTIA<br>**Stellarton (Pictou County)** | | |
|---|---|---|---|---|---|
| FYFE AND TAYLOR<br>FILOR | | | ACADIA COAL CO. LTD. (1)<br>ALBION, MCGREGOR (2), MCBEAN (3)<br>**ACADIA** (4) | | |
| 9,000 | | | 365,000 | | |
| East of River Hebert | | | Stellarton & Thorburn<br>McBean (McBean); Third & Cage (Albion);<br>McGregor & Fleming (McGregor) | | |
| Lump | Slack* | Fines | Egg, Nut | Stoker | Slack |
| + 1½ sq. | ½ x 1½ sq. | 0 x ½ sq. | (5) | $\frac{3}{16}$T. x ¾ sq. | 0 x $\frac{3}{16}$ T., ¾ sq. |
| 1 | 1 | 1 | 42 | 7 | 18 |
| 3·0 | 4·0 | 5·5 | 2·5 | 5·0 | 4·0 |
| 11·0 | 14·8 | 13·4 | 14·5 | 11·9 | 13·2 |
| 35·2 | 34·4 | 33·2 | 27·9 | 28·1 | 27·6 |
| 50·8 | 46·8 | 47·9 | 55·1 | 55·0 | 55·2 |
| 12,180 | 11,410 | 11,500 | 12,470 | 12,410 | 12,350 |
| 2080 | 2100 | 2100 | 2510 | 2455 | 2355 |
| 4·9 | 5·8 | 5·4 | 1·3 | 1·0 | 1·3 |
| | Poor | | Fair<br>38 | Fair | Fair |
| 2·0 | 2·5 | 2·5 | 1·0–3·0 | 1·5–3·0<br>–25 (6) | 1·0–3·0 |
| | High volatile A bituminous<br>145—Subbituminous | | | High volatile A bituminous<br>168—Parabituminous | |
| 54·0 | 46·5 | 48·5 | 47·3 | 46·4 | 50·6 |
| 37·0 | 43·0 | 41·2 | 42·3 | 43·1 | 39·5 |
| 57 | 56 | 59 | 55 | 57 | 63 |

ANALYSES OF ASH—(Acadia)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 54·2 | 24·9 | 11·7 | 1·8 | 1·4 | 0·02 | 0·5 | 1·9 | 0·3 | 0·7 | 2·5 |

REMARKS—

* This size could be referred to as "prepared stoker".

(1) All the + ¼ in. coal is washed at central wet cleaning plant situated at Allan shaft site but most of the coal from the two mines (McBean & Albion) are loaded out separately. (2) Albion & McGregor mines have a common tipple. (3) McBean Colliery is at Thorburn. Coal washed at Allen shaft cleaning plant. (4) Some of samples included in averages came from the Allan shaft and Acadia No. 7 mines, not in operation since 1951 & 1947 respectively. (5) Lump = + 1¾ sq. Egg = 1¾ sq. x 7 in. rd. Nut = ¾ x 1¾ in. sq. (6) The F.R.L. Swelling Index is for an average of all the seams, the different seams varying from an index of −237 to +438.

| | |
|---|---|
| Province | NOVA SCOTIA |
| Area | **Stellarton (Pictou County)** |
| Operator | Acadia Coal Co. Ltd. |
| Mine | Albion & McGregor (1) |
| Trade name | **ACADIA** |
| Output.....tons/annum | 245,000 |
| Location of Mine | Stellarton |
| Seam | Third, Cage, McGregor & Fleming, Acadia No. 1 |

| Size | Run of Washer | Egg | Nut | Stoker Pea | Slack | Fines |
|---|---|---|---|---|---|---|
| Screen limits at mine.....in. | + $\frac{3}{16}$T. | $1\frac{3}{4}$ sq. x 7 rd. | $\frac{3}{4}$ x $1\frac{3}{4}$ sq. | $\frac{3}{16}$ T. x $\frac{3}{4}$ sq. | 0 x $\frac{3}{4}$, $\frac{7}{8}$ sq. | 0 x $\frac{3}{16}$ T. |
| No. of samples | 1 | 2 | 2 | 2 | 5 | 2 |
| **Chemical Properties—** | | | | | | |
| *As Received Basis* | | | | | | |
| *Proximate Analysis—* | | | | | | |
| Moisture.....% | 4·0 | 2·0 | 3·5 | 6·5 | 5·5 | 5·0 |
| Ash.....% | 14·5 | 14·5 | 13·0 | 12·3 | 12·8 | 14·7 |
| Volatile matter.....% | 27·0 | 27·5 | 27·3 | 26·6 | 26·8 | 27·1 |
| Fixed carbon.....% | 54·5 | 58·0 | 56·2 | 54·6 | 54·9 | 53·2 |
| Calorific value.....B.t.u./lb. | 12,090 | 12,450 | 12,390 | 12,040 | 12,210 | 11,860 |
| Ash softening temperature.....°F. | 2650 | 2675 | 2690 | 2630 | 2410 | 2200 |
| *Ultimate Analysis—* | | | | | | |
| Carbon.....% | 69·3 | | | | | |
| Hydrogen.....% | 4·3 | | | | | |
| Nitrogen.....% | 1·8 | | | | | |
| Sulphur.....% | 1·4 | 1·3 | 1·4 | 1·2 | 1·4 | 1·6 |
| Oxygen.....% | 4·7 | | | | | |
| *Caking Properties—* | | | | | | |
| Volatile matter residue—950°C..... | Fair | Fair | Fair | Fair | Fair | Poor |
| Caking index (Gray)..... | 3·5 | | | | | |
| *Swelling Properties—* | | | | | | |
| Swelling index (A.S.T.M.)..... | 2·5 | 2·0 | 2·0 | 3·0 | 2·0 | 1·0 |
| Swelling index (F.R.L.)..... | | | −130 | | | |
| *Classification by Rank—* | | | | | | |
| A.S.T.M..... | | | High volatile A bituminous | | | |
| S.V.I..... | | | 169—Parabituminous | | | |
| **Physical Properties—** | | | | | | |
| Bulk density.....lb./cu. ft. | 50·5 | 48·9 | 46·6 | 47·0 | 52·2 | 50·0 |
| cu. ft./ton | 39·6 | 40·9 | 42·9 | 42·6 | 38·3 | 40·0 |
| Grindability index..... | 57 | 56 | 56 | 57 | 64 | 67 |

**Analyses of Ash (Albion and McGregor)—**

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 53·3 | 25·4 | 12·8 | 1·5 | 1·4 | 0·02 | 0·3 | 2·0 | 0·3 | 0·7 | 2·2 |

**Remarks—**

(1) Coal washed at Allan shaft wet cleaning plant. The 0 x $\frac{3}{16}$ in. fines are not cleaned.

NOVA SCOTIA
**Thorburn (Pictou County)**

ACADIA COAL CO. LTD.
McBEAN (1)
**ACADIA**
120,000
Thorburn
McBean

| Run of Washer | Egg | Nut | Stoker Pea | Slack | Fines |
|---|---|---|---|---|---|
| + $\frac{3}{16}$ T. | $1\frac{3}{4}$ sq. x 7 rd. | $\frac{3}{4}$ x $1\frac{3}{4}$ sq. | $\frac{3}{16}$ T. x $\frac{3}{4}$ sq. | 0 x $\frac{3}{4}$ sq. | 0 x $\frac{3}{16}$ T. |
| 1 | 1 | 2 | 2 | 1 | 2 |
| 2·7 | 2·0 | 2·8 | 3·4 | 3·2 | 3·0 |
| 10·8 | 11·1 | 11·1 | 11·4 | 11·7 | 11·9 |
| 28·1 | 28·3 | 28·6 | 28·5 | 27·7 | 29·0 |
| 58·4 | 58·6 | 57·5 | 56·7 | 57·4 | 56·1 |
| 13,060 | 12,960 | 12,840 | 12,630 | 12,760 | 12,570 |
| 2500 | 2460 | 2460 | 2430 | 2420 | 2395 |
| 72·8 | | | | | |
| 4·7 | | | | | |
| 1·8 | | | | | |
| 0·3 | 0·4 | 0·5 | 0·5 | 0·4 | 0·6 |
| 6·9 | | | | | |
| Fair | Fair | Poor | Poor | Fair | Poor |

37–46
1.5-2.5
—150

High volatile A bituminous
169—Parabituminous

| | | | | | |
|---|---|---|---|---|---|
| 50·0 | 47·8 | 45·8 | 45·8 | 51·5 | 49·5 |
| 40·0 | 41·8 | 43·7 | 43·7 | 38·8 | 40·4 |
| 55 | 54 | 55 | 57 | 60 | 62 |

ANALYSES OF ASH (McBean)—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 52·1 | 22·5 | 3·8 | 7·4 | 0·7 | 0·3 | 1·4 | 1·6 | 0·2 | 0·8 | 8·1 |

REMARKS—
(1) Coal washed at Allan shaft wet cleaning plant. The 0 x $\frac{3}{16}$ in. fines are not cleaned.

| | |
|---|---|
| Province | NOVA SCOTIA |
| Area | **Westville (Pictou County)** |
| Operator | DRUMMOND COAL, LTD. (1) |
| Mine | DRUMMOND No. 1 AND No. 2 (2) |
| Trade name | **DRUMMOND** |
| Output.....tons/annum | 93,000 |
| Location of Mine | Westville |
| Seam | Main (No. 1), Second or Scott (No. 2) |

| Size | Mine Run | Lump | Nut | Slack |
|---|---|---|---|---|
| Screen limits at mine.....in. | | + 1¼, 1½ sq. | ¾ x 1¼, 1½ sq. | 0 x ¾ sq. |
| No. of samples | 13 | 29 | 3 | 21 |
| CHEMICAL PROPERTIES— | | | | |
| *As Received Basis*— | | | | |
| *Proximate Analysis*— | | | | |
| Moisture.....% | 2·5 | 2·0 | 2·0 | 5·0 |
| Ash.....% | 19·7 | 20·5 | 21·3 | 18·3 |
| Volatile matter.....% | 24·1 | 23·9 | 24·8 | 25·0 |
| Fixed carbon.....% | 53·7 | 53·6 | 51·9 | 51·7 |
| Calorific value.....B.t.u./lb. | 11,610* | 11,620 | 11,400 | 11,290 |
| Ash softening temperature.....°F. | 2440 | 2500 | 2530 | 2330 |
| *Ultimate Analysis*— | | | | |
| Carbon.....% | 67·0 | | | |
| Hydrogen.....% | 4·2 | | | |
| Nitrogen.....% | 1·8 | | | |
| Sulphur.....% | 1·3 | 1·1 | 1·2 | 1·6 |
| Oxygen.....% | 3·5 | | | |
| *Caking Properties*— | | | | |
| Volatile matter residue—950°C | | Poor to Fair | | |
| Caking index (Gray) | 43 | | | |
| *Swelling Properties*— | | | | |
| Swelling index (A.S.T.M.) | 2·5 | 1·0–3·5 | 1·0–3·0 | 1·0 |
| Swelling index (F.R.L.) | 219 | | | |
| *Classification by Rank*— | | | | |
| A.S.T.M. | | Medium volatile bituminous | | |
| S.V.I. | | 172—Parabituminous | | |
| PHYSICAL PROPERTIES— | | | | |
| Bulk density.....lb./cu. ft. | 60·0 | 53·7 | 49·4 | 49·5 |
| cu. ft./ton | 33·3 | 37·2 | 40·5 | 40·4 |
| Grindability index | | 64 | 64 | 64 |

ANALYSES OF ASH—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 55·3 | 26·0 | 7·0 | 3·3 | 1·1 | 0·02 | 0·8 | 1·8 | 0·4 | 0·7 | 3·8 |

REMARKS—

(1) Formerly Intercolonial Coal Co. Ltd.

(2) No. 2 mine accounts for approximately two-thirds of the total output and the analyses therefore represent a mixture of No. 2 and No. 1 mines in the proportion of approximately 2 to 1 respectively.

* The calorific value of mine run was calculated using the dry mineral matter free calorific values of the lump, nut, and slack in proportion to their average production. (Lump–69·0% at 15,370 Btu/lb., Nut–10·8% at 15,280 Btu/lb., Slack–20·2% at 15,125 Btu/lb.).

| NOVA SCOTIA<br>**Westville (Pictou County)**<br>DRUMMOND COAL, LTD.<br>No. 1<br>**DRUMMOND**<br>Westville<br>Main | | | NOVA SCOTIA<br>**Westville (Pictou County)**<br>DRUMMOND COAL, LTD.<br>No. 2<br>**DRUMMOND**<br>Westville<br>Second or Scott | | |
|---|---|---|---|---|---|
| Lump | Nut | Slack | Lump | Nut | Slack |
| + 1½ sq. | ¾ x 1½ sq. | 0 x ¾ sq. | + 1½ sq. | ¾ x 1½ sq. | 0 x ¾ sq. |
| 1 | 2 | 1 | 1 | 1 | 1 |
| 2·0 | 2·0 | 5·0 | 2·0 | 2·0 | 5·0 |
| 12·1 | 15·1 | 15·8 | 22·9 | 23·8 | 23·8 |
| 28·6 | 27·0 | 27·5 | 23·8 | 23·7 | 23·4 |
| 57·3 | 55·9 | 51·7 | 51·3 | 50·5 | 47·8 |
| 12,780 | 12,340 | 11,534 | 11,150 | 11,010 | 10,500 |
| 2340 | 2365 | 2390 | 2600 | 2610 | 2590 |
| (1) | | | (1) | | |
| 73·6 | | | 64·4 | | |
| 4·3 | | | 4·1 | | |
| 2·1 | | | 1·7 | | |
| 0·8 | 1·0 | 1·2 | 1·6 | 1·4 | 1·3 |
| 5·1 | | | 3·3 | | |
| Fair | Fair | Poor | Poor | Poor | Poor |
| 49 | | | 36 | | |
| 3·5 | 3·0 | 1·0 | 1·0 | 1·0 | 1·0 |
| 477 | | | −40 | | |
| High volatile A bituminous<br>163—Parabituminous | | | Medium volatile bituminous<br>172—Parabituminous | | |
| 51·5 | 47·0 | 49·5 | 54·8 | 50·5 | 49·5 |
| 38·8 | 42·6 | 40·4 | 36·5 | 39·6 | 40·4 |
| 63 | 63 | 62 | 65 | 64 | 65 |

ANALYSES OF ASH—(Drummond No. 1)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 53·0 | 23·0 | 6·8 | 6·9 | 1·1 | — | 0·1 | 1·5 | 0·3 | 0·7 | 6·4 |

ANALYSES OF ASH—(Drummond No. 2)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 50·4 | 27·8 | 6·7 | 4·6 | 1·2 | — | 1·3 | 1·8 | 0·4 | 0·6 | 5·2 |

REMARKS—

(1) With the exception of the sulphur these analyses were calculated from P. & C. Survey analyses.

| | |
|---|---|
| Province | NEW BRUNSWICK |
| Area | **Minto (North Area)** |
| Operator | Mills, Ltd., D. W. and R. A. (1) |
| Mine | Mills, Lease No. 222 (Strip Pit) |
| Trade name | **MILLS** |
| Output.....tons/annum | 141,000 |
| Location of Mine | 5 miles east of Minto |
| Seam | Main |

| Size | Lump | (Stoker (2) | Slack (2) |
|---|---|---|---|
| Screen limits at mine.....in. | + 1¼, +2 sq. | ⅝ x 1¼ | 0 x 1¼, 2 sq. |
| No. of samples | 2 | 9 | 3 |
| CHEMICAL PROPERTIES— | | | |
| *As Received Basis* | | | |
| *Proximate Analysis*— | | | |
| Moisture.....% | 3·0 | 3·0 | 5·0 |
| Ash.....% | 15·9 | 16·8 | 16·8 |
| Volatile matter.....% | 32·0 | 32·8 | 31·6 |
| Fixed carbon.....% | 49·1 | 47·4 | 46·6 |
| Calorific value.....B t.u./lb. | 12,080 | 12,010 | 11,620 |
| Ash softening temperature.....°F. | 2025 | 2070 | |
| *Ultimate Analysis*— | | | |
| Carbon.....% | | | |
| Hydrogen.....% | | | |
| Nitrogen.....% | | | |
| Sulphur.....% | 7·0 | 7·0 | 7·1 |
| Oxygen.....% | | | |
| *Caking Properties*— | | | |
| Volatile matter residue—950°C | Fair | Fair | Fair |
| Caking index (Gray) | | | |
| *Swelling Properties*— | | | |
| Swelling index (A.S.T.M.) | 5·5 | | 5·5 |
| Swelling index (F.R.L.) | 485 | | |
| *Classification by Rank*— | | | |
| A.S.T.M | High Volatile A bituminous | | |
| S.V.I. | 173—Parabituminous | | |
| PHYSICAL PROPERTIES— | | | |
| Bulk density.....lb./cu. ft. | 51·8 | 54·0 | 52·8 |
| cu. ft./ton | 38·6 | 37·0 | 37·9 |
| Grindability index | 62 | | 64 |

REMARKS—

(1) Operate three strip pits in the Salmon Harbour area close to Grand Lake. Tipple and loading at Midland about 12 miles N.E. of Minto.

(2) During winter stoker and slack sizes are oil treated to aid in frostproofing; cars are covered with 40 x 12 ft. sheets of Polycraft plastic to protect the coal from snow and rain.

NEW BRUNSWICK
**Minto (North Area)**

MIRAMICHI LUMBER CO. LTD. (1)
LEASE NOS. 171, 172, 209 (2)
**MINTO; XLO COAL; NORTHFIELD; MIRAMICHI**
283,000
North Minto
Main (14–28 in.)

| Mine Run | Lump | Stoker, Nut | Slack |
|---|---|---|---|
| | + 1¼, + 2 sq. | ⅝ x 1¼, 1 x 2 sq. | 0 x 1, 1¼ sq. |
| 22 | 8 | 4 | 9 |
| 3·0 | 2·0 | 2·0 | 5·0 |
| 18·6 | 15·4 | 14·9 | 19·2 |
| 30·1 | 32·6 | 32·7 | 30·2 |
| 48·3 | 50·0 | 50·4 | 45·6 |
| 11,830 | 12,370 | 12,450 | 11,210 |
| 2030 | 2080 | 2130 | 2075 |
| 64·3 | | | 60·2 |
| 4·2 | | | 4·3 |
| 0·7 | | | 0·7 |
| 6·7 | 7·2 | 7·0 | 7·0 |
| 2·5 | | | 3·6 |
| Good | Fair | Fair | Fair |
| 5·0–7·0 | 8·0 | 5·5–7·5 | 5·0–7·5 |

500

High volatile A bituminous
180—Orthobituminous

| | | | |
|---|---|---|---|
| 58·5 | 53·4 | 50·4 | 53·1 |
| 34·2 | 37·5 | 39·7 | 37·7 |
| | 69 | 62 | 68 |

ANALYSES OF ASH—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 37·5 | 19·9 | 32·1 | 3·1 | 1·3 | 0·2 | — | 1·2 | 5·0 | 0·7 | 3·7 |

REMARKS—

(1) The company has subcontracts with Minto Construction Co. Ltd. and Crawford Contractors Ltd. who operate strips in North Minto area, the latter about 1 mile North of North Minto Post Office and the former near the old Slope mine. The company itself operates a strip in the Newcastle Creek area on Yeaman's property. Two deep mines with a total tonnage of about 75,000 tons/annum are also in operation, namely shaft No. 26 and Slope No. 1.

(2) Strip and deep mines but major production from strip mines.

| | |
|---|---|
| Province | NEW BRUNSWICK |
| Area | **Minto (South Area)** |
| Operator | Avon Coal Co. Ltd. (1)* |
| Mine | Stripping Pits: Lease Nos. 196, 223 (2) |
| Trade name | **AVON** |
| Output.....tons/annum | 137,000 |
| Location of Mine | South of Minto, near Rothwell |
| Seam | Main (19 to 24 in.) |

| Size | Mine Run | Lump | Nut | Stoker | Slack | Fines |
|---|---|---|---|---|---|---|
| Screen limits at mine.....in. | | +⅝, 2 sq. | (3) | ¼ x 1¼ sq. | 0 x ⅝, 1¼ sq. | 0 x ¼ 6 mm.sq. |
| No. of samples | 8 | 9 | 2 | 1 | 13 | 3 |
| **Chemical Properties—** | | | | | | |
| *As Received Basis* | | | | | | |
| *Proximate Analysis—* | | | | | | |
| Moisture.....% | 3·0 | 2·0 | 2·0 | 2·5 | 2·5 | 2·5 |
| Ash.....% | 17·6 | 16·5 | 16·5 | 16·1 | 18·3 | 20·2 |
| Volatile matter.....% | 29·8 | 30·7 | 31·8 | 31·3 | 30·2 | 29·3 |
| Fixed carbon.....% | 49·6 | 50·8 | 49·7 | 50·1 | 49·0 | 48·0 |
| Calorific value.....B.t.u./lb. | 11,810 | 12,090 | 12,080 | 11,960 | 11,680 | 11,210 |
| Ash softening temperature.....°F. | 2000 | 2005 | 1950 | 1960 | 2015 | 2050 |
| *Ultimate Analysis—* | | | | | | |
| Carbon.....% | 64·8 | | | | | |
| Hydrogen.....% | 4·3 | | | | | |
| Nitrogen.....% | 0·8 | | | | | |
| Sulphur.....% | 7·9 | 7·8 | 8·5 | 7·9 | 8·1 | 8·7 |
| Oxygen.....% | 1·6 | | | | | |
| *Caking Properties—* | | | | | | |
| Volatile matter residue—950°C.... | Good | Good | Fair | Fair | Fair | Fair |
| Caking index (Gray)..... | 54 | | | | | |
| *Swelling Properties—* | | | | | | |
| Swelling index (A.S.T.M.)..... | | | | 5·0–6·5 | | |
| Swelling index (F.R.L.)..... | 550 | | | | | |
| *Classification by Rank—* | | | | | | |
| A.S.T.M..... | | | | High volatile A bituminous | | |
| S.V.I..... | | | | 175—Border of Ortho and Parabituminous | | |
| **Physical Properties—** | | | | | | |
| Bulk density.....lb./cu. ft. | 60·5 | 55·5 | 50.5 | 53·0 | 56·8 | 54·0 |
| cu. ft./ton | 33·1 | 36·0 | 39·6 | 37·7 | 35·2 | 37·0 |
| Grindability index..... | 79 | 71 | 65 | 65 | 74 | 79 |

**Analyses of Ash**

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 30·1 | 20·3 | 41·0 | 3·2 | — | 0·1 | 0·5 | 1·0 | 1·3 | 0·8 | 1·5 |

Remarks:

(1) Vissac dryer for drying slack coal. Wet washer installed in spring 1955 to clean minus 1¼ in. sizes.
(2) Analyses include samples from Lease Nos. 162, 206, 179, 214, and 223.
(3) Nut: ¾ x 1¼ in. sq. and 1¼ x 2 in. sq.
* A wet cleaning (Baum-type jig) plant was put in operation early in 1955 and it is anticipated that once the plant operation is stabilized many of the sizes will be substantially lower in ash content.

| NEW BRUNSWICK<br>**Minto (South Area)**<br><br>KING MINING CO. LTD. (1)<br>CROWN LEASE No. 219<br>**KING**<br>45,000<br>4 miles S.W. of Minto<br>Main (19 in.) | | | NEW BRUNSWICK<br>**Minto (South Area)**<br><br>MACDONALD J. F. (2)<br>LEASE No. 725<br><br>E. of Minto near Newcastle Creek<br>Main |
|---|---|---|---|
| Mine Run | Lump<br>+ 1¼ sq. | Slack<br>0 x 1¼ sq. | Mine Run |
| 2 | 2 | 3 | 2 |
| 3·0 | 2·0 | 5·5 | 3·0 |
| 15·3 | 14·1 | 16·2 | 17·5 |
| 32·0 | 32·1 | 30·3 | 31·5 |
| 49·7 | 51·8 | 48·0 | 48·0 |
| 12,080 | 12,410 | 11,640 | 11,760 |
| 2140 | 2140 | 2110 | 2025 |
| | | 64·4 | |
| | | 4·3 | |
| | | 0·9 | |
| 7·8 | 7·6 | 7·4 | 8·3 |
| | | 1·3 | |
| | Fair-Good | | Fair |
| 6·0 | 6·0 | 6·5 | |
| | High volatile A bituminous<br>169—Parabituminous | | High volatile A bituminous<br>173—Parabituminous |
| | 49·8 | 53·5 | |
| | 40·2 | 37·4 | |
| | 64 | 64 | |

REMARKS:
(1) Started strip in 1948.
(2) Listed as operator for A. W. Wasson Ltd. Underground mine.

| | |
|---|---|
| Province | NEW BRUNSWICK |
| Area | **Minto (South Area)** |
| Operator | McMann, H. H. (1) |
| Mine | Rothwell Lease-Lake Road (Lease No. 176) |
| Trade name | |
| Output.....tons/annum | 7,000 |
| Location of Mine | 2½ miles E. of Minto; Newcastle Creek |
| Seam | Main |
| Size | Mine Run |
| Screen limits at mine.....in. | |
| No. of samples | 3 |
| Chemical Properties— | |
| *As Received Basis* | |
| *Proximate Analysis*— | |
| Moisture.....% | 3·0 |
| Ash.....% | 17·5 |
| Volatile matter.....% | 31·1 |
| Fixed carbon.....% | 48·4 |
| Calorific value.....B.t.u./lb. | 11,770 |
| Ash softening temperature.....°F. | 2055 |
| *Ultimate Analysis*— | |
| Carbon.....% | |
| Hydrogen.....% | |
| Nitrogen.....% | |
| Sulphur.....% | 7·7 |
| Oxygen.....% | |
| *Caking Properties*— | |
| Volatile matter residue—950°C | Fair |
| Caking index (Gray) | |
| *Swelling Properties*— | |
| Swelling index (A.S.T.M.) | 5·5 |
| Swelling index (F.R.L.) | |
| *Classification by Rank*— | |
| A.S.T.M. | High volatile A bituminous |
| S.V.I. | 175—Parabituminous |
| Physical Properties— | |
| Bulk density.....lb./cu. ft. | 57·5 |
| cu. ft./ton | 34·8 |
| Grindability index | 67 |

Remarks—

(1) Victor McMann, operator, underground mine.

NEW BRUNSWICK
**Minto (South Area)**

WASSON, A. W. LTD. (1)
STRIP PITS ON LEASE NOS. 199, 212, 218 (2)

80,000
Near Rothwell, South of Minto
Main

NEW BRUNSWICK
**Minto (Newcastle Bridge Area)**

NEWCASTLE COAL CO. LTD. (4)
SHAFT NO. 3 (LEASE NO. 191)

**NEWCASTLE**
65,000
Newcastle Bridge, 2 mi. N.E. of Minto
Main (Approx. 22 in.)

| Mine Run | Lump +1¼ sq. | Slack 0 x ¾, 1¼ sq. | Mine Run (soft coal (3) | Mine Run | Lump +1½ sq. | Slack 0 x 1½ sq. |
|---|---|---|---|---|---|---|
| 24 | 1 | 2 | 1 | 12 | 3 | 4 |
| 3·0 | 2·5 | 5·0 | 5·0 | 3·0 | 2·0 | 5·0 |
| 17·2 | 15·2 | 16·9 | 12·7 | 17·2 | 16·4 | 18·8 |
| 31·1 | 31·4 | 30·5 | 33·0 | 30·7 | 32·0 | 30·4 |
| 48·7 | 50·9 | 47·6 | 49·3 | 49·0 | 49·6 | 45·8 |
| 11,960 | 12,200 | 11,440 | 12,460 | 11,990 | 12,180 | 11,380 |
| 2030 | 2120 | 2160 | 2100 | 1995 | 2030 | 2050 |
| 65·1 | | | | 65·2 | | |
| 4·4 | | | | 4·2 | | |
| 0·8 | | | | 0·9 | | |
| 7·3 | 6·7 | 7·8 | 6·5 | 6·8 | 7·0 | 6·2 |
| 2·2 | | | | 2·6 | | |
| Good | Fair | Fair | Fair | Good | Fair | Fair |
| 62 | | | | 49 | | |
| 6·0–6·5 | 7·0 | 6·0 | 6·5 | 5·0–6·0 | 5·5 | 5·5 |
| 404 | | | | 511 | | |
| | High volatile A bituminous 177—Orthobituminous | | | High volatile A bituminous 177—Orthobituminous | | |
| 57·0 | 51·3 | 52·3 | 51·0 | 55·0 | 51·5 | 55·9 |
| 35·1 | 39·0 | 38·2 | 39·2 | 36·0 | 38·8 | 35·8 |
| 66 | 64 | 72 | | 64 | 61 | 66 |

ANALYSES OF ASH (Wasson)—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 27·5 | 5·4 | 57·2 | 3·7 | 0·3 | 0·2 | — | 0·9 | 0·9 | 0·6 | 3·7 |

ANALYSES OF ASH (Newcastle)—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 34·5 | 25·2 | 30·3 | 3·2 | 1·7 | 0·14 | — | 1·2 | 1·1 | 0·7 | 2·4 |

REMARKS—

(1) Successor to Rothwell Coal Co.
(2) Small tonnage from underground operation. Strip coal screened at shaft mine when required. The deep and strip mined coals are not segregated.
(3) "Soft Coal" is coal partially oxidized *in situ* and is either found at the outcrop or wherever the cover is thin and permeable. "Soft Coal" is very variable in quality.
(4) Underground mine.

| | |
|---|---|
| Province | NEW BRUNSWICK |
| Area | **Beersville (Kent County)** |
| Operator | WASSON, A. W. LTD. |
| Mine | (1) |
| Trade name | |
| Output.....tons/annum | |
| Location of Mine | Near Beersville (Kent Co.) |
| Seam | |

| | |
|---|---|
| Size | Mine Run (2) |
| Screen limits at mine.....in. | |
| No. of samples | 3 |
| CHEMICAL PROPERTIES— | |
| *As Received Basis—* | |
| *Proximate Analysis—* | |
| Moisture.....% | 9·0 |
| Ash.....% | 13·2 |
| Volatile matter.....% | 33·3 |
| Fixed carbon.....% | 44·5 |
| Calorific value.....B.t.u./lb. | 11,350 |
| Ash softening temperature.....°F. | 2065 |
| *Ultimate Analysis—* | |
| Carbon.....% | 63·4 |
| Hydrogen.....% | 4·0 |
| Nitrogen.....% | 1·0 |
| Sulphur.....% | 5·6 |
| Oxygen.....% | 3·8 |
| *Capacity Moisture basis—* | |
| *Proximate Analysis—* | |
| Capacity moisture.....% | |
| Ash.....% | |
| Volatile matter.....% | |
| Fixed carbon.....% | |
| Calorific value.....B.t.u./lb. | |
| *Caking Properties—* | |
| Volatile matter residue—950°C..... | Fair |
| Caking index (Gray)..... | |
| *Swelling Properties—* | |
| Swelling index (A.S.T.M.)..... | 3·5 |
| Swelling index (F.R.L.)..... | |
| *Classification by Rank—* | |
| A.S.T.M..... | High volatile A bituminous |
| S.V.I..... | 158—Subbituminous |
| PHYSICAL PROPERTIES— | |
| Bulk density.....lb./cu. ft. | |
| cu. ft./ton | |
| Grindability index..... | 62 |

REMARKS—

(1) Strip mine close to outcrop.
(2) As this coal was strip mined close to the outcrop it was so-called "soft coal", being variably oxidized. This accounts for the apparent depression in S.V.I. rank.

SASKATCHEWAN
**Souris (Bienfait Division)**

GENERAL
(1)

1,679,000
Tps. 1 and 2; R. 6, 7 and 8; W. of 2nd.
Upper (No. 2, No. 3)

| Lump & Cobble | Stove, Egg | Nut and Stoker | Slack |
|---|---|---|---|
| + 4, + 8 rd., 4 x 8 rd. | 2 x 3, 4 rd. | (2) | 0 x ½, 1½ |
| 41 | 24 | 51 | 10 |
| 32·5* | 32·5* | 32·5* | 32·5* |
| 6·1 | 6·2 | 6·8 | 9·1 |
| 27·5 | 27·5 | 27·3 | 26·5 |
| 33·9 | 33·8 | 33·4 | 31·9 |
| 7,640 | 7,620 | 7,600 | 7,240 |
| 2230 | 2270 | 2260 | 2240 |
| 44.8 | | | |
| 3·0 | | | |
| 0·7 | | | |
| 0·5 | 0·5 | 0·5 | 0·5 |
| 12·4 | | | |
| 29·7 | 29·7 | 29·7 | 29·7 |
| 6·3 | 6·5 | 7·1 | 9·5 |
| 28·6 | 28·6 | 28·4 | 27·6 |
| 35·4 | 35·2 | 34·8 | 33·2 |
| 7,960 | 7,940 | 7,920 | 7,540 |

Non-agglomerate
0

Non-caking

Lignite
101—Black Lignite

| | | | |
|---|---|---|---|
| 44·6 | 42·2 | 39·7 | 42·0 |
| 44·8 | 47·4 | 50·4 | 47·6 |
| 50 | 47 | 51 | 58 |

ANALYSES OF ASH—(Bienfait Division)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 24·4 | 13·2 | 5·9 | 22·5 | 6·3 | 0·03 | 7·4 | 1·0 | 0·9 | 0·5 | 17·2 |

REMARKS—

(1) Banks, Harry—Harry Banks Mine. Manitoba & Saskatchewan Coal Co. Ltd.—M. & S. Mines—strip. Western Dominion Coal Mines Ltd.—W. D. Mines—strip. North-West Coal Co. Ltd.—"Sasko"—strip.

(2) Nut—½, 1 x 2 in. rd. Stoker—¼, ½ x 1, 1½ in.

* When freshly mined the coal contains about 35% moisture.

| | |
|---|---|
| Province | SASKATCHEWAN |
| Area | **Souris (Roche Percee Division)** |
| Operator | GENERAL |
| Mine | (1) |
| Trade name | |
| Output.....tons/annum | 433,000 |
| Location of Mine | Sec. 30; Tp. 1; R 6; W. of 2nd. |
| Seam | Upper |

| Size | Lump, Cobble | Stove | Nut | Stoker | Bug Dust |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | (2) | 2 x 4 rd. | 1 x 2 rd. | (3) | 0 x ½ rd. |
| No. of samples | 6 | 5 | 4 | 9 | 3 |
| CHEMICAL PROPERTIES— | | | | | |
| *As Received Basis* | | | | | |
| *Proximate Analysis*— | | | | | |
| Moisture.....% | 32·5* | 32·5* | 32·5* | 32·5* | 32·5* |
| Ash.....% | 6·7 | 6·5 | 6·9 | 6·9 | 8·0 |
| Volatile matter.....% | 26·8 | 27·1 | 28·3 | 26·2 | 26·4 |
| Fixed carbon.....% | 34·0 | 33·9 | 32·3 | 34·4 | 33·1 |
| Calorific value.....B.t.u./lb. | 7,580 | 7,620 | 7,590 | 7,610 | 7,430 |
| Ash softening temperature.....°F | 2185 | 2195 | 2380 | 2190 | 2140 |
| *Ultimate Analysis*— | | | | | |
| Carbon.....% | 44·4 | | | | |
| Hydrogen.....% | 3·1 | | | | |
| Nitrogen.....% | 0·8 | | | | |
| Sulphur.....% | 0·5 | 0·5 | 0·5 | 0·5 | 0·5 |
| Oxygen.....% | 12·0 | | | | |
| *Capacity Moisture Basis* | | | | | |
| *Proximate Analysis*— | | | | | |
| Capacity moisture.....% | 31·0 | 31·0 | 31·0 | 31·0 | 31·0 |
| Ash.....% | 6·8 | 6·7 | 7·0 | 7·1 | 8·1 |
| Volatile matter.....% | 27·4 | 27·7 | 28·9 | 26·8 | 27·0 |
| Fixed carbon.....% | 34·8 | 34·6 | 33·1 | 35·1 | 33·9 |
| Calorific value.....B.t.u./lb. | 7,750 | 7,790 | 7,760 | 7,780 | 7,600 |
| *Caking Properties*— | | | | | |
| Volatile matter residue—950°C..... | Non-agglomerate | | | | |
| Caking index (Gray)..... | 0 | | | | |
| *Swelling Properties*— | | | | | |
| Swelling index (A.S.T.M.)..... | Non-caking | | | | |
| *Classification by Rank*— | | | | | |
| A.S.T.M..... | Lignite | | | | |
| S.V I..... | 106—Black Lignite | | | | |
| PHYSICAL PROPERTIES— | | | | | |
| Bulk density.....lb./cu. ft. | 46·5 | 40·5 | 41·7 | 41·3 | 39·8 |
| cu. ft./ton | 43·0 | 49·4 | 47·9 | 48·4 | 50·3 |
| Grindability index..... | 41 | 48 | 48 | 48 | 59 |

ANALYSES OF ASH—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 33·7 | 12·5 | 5·1 | 17·3 | 4·0 | 0·03 | 10·2 | 1·1 | 0·7 | 0·5 | 13·7 |

REMARKS—

(1) Portal Coals Ltd.,—(Prior to 1950 Roche Percee Coal Mining Co. Ltd.)—Old Mac Coal Ltd., Operators. Strip pits and only operator in the area.
(2) Lump: +8, 10, or 12 in.; Cobble: 4 x 8, 10 or 12 in.
(3) ¼, ½ x 1½ or 2 in. rd.

* When freshly mined the coal contains about 35% moisture.

| SASKATCHEWAN<br>**Souris (Estevan Division)**<br><br>GENERAL<br>(1)<br><br>Tp. 1 and 2; R. 8; W. of 2nd | | | SASKATCHEWAN<br>**Souris (Bienfait Division)**<br><br>BANKS, HARRY<br>BANKS<br>**BANKS**<br>2,000<br>Bienfait-Sec. 31; Tp. 1; R. 6; W. of 4th |
|---|---|---|---|
| Lump, Cobble | Stove | Nut Stoker | Lump |
| +8 rd., 4 x 8 rd. | 2 x 4 rd. | ½ x 2 rd. | |
| 5 | 1 | 2 | 1 |
| 32·5** | 32·5** | 32·5** | 32·5** |
| 8·8 | 8·8 | 11·1 | 5·7 |
| 26·6 | 26·1 | 25·4 | 26·5 |
| 32·1 | 32·6 | 31·0 | 35·3 |
| 7,260 | 7,340 | 6,910 | 7,640 |
| 2145 | 2110 | 2125 | 2110 |
| 0·3 | 0·3 | 0·3 | 0·3 |
| 30·3* | 30·3* | 30·3* | 32·2 |
| 9·1 | 9·1 | 11·5 | 5·8 |
| 27·5 | 27·0 | 26·2 | 26·6 |
| 33·1 | 33·6 | 32·0 | 35·4 |
| 7,500 | 7,580 | 7,140 | 7,680 |
| | Non-agglomerate<br>0 | | Non-agglomerate<br>0 |
| | Non-caking | | Non-caking |
| | Lignite<br>98—Lignite (2) | | Lignite<br>95—Lignite (2) |
| 41·0 | 42·5 | 41·3 | |
| 38·8 | 37·0 | 38·4 | |

REMARKS—

(1) No commercial production in the area since January 1954.
(2) Border of brown and black lignite.
* Used new average values for Bienfait and Roche Percee Divisions, as no new samples had been received from the Estevan Division.
** Freshly mined coal contains about 35% moisture.

| | |
|---|---|
| Province | SASKATCHEWAN |
| Area | **Souris (Bienfait Division)** |
| Operator | MANITOBA AND SASKATCHEWAN COAL CO. LTD. |
| Mine | M. & S. MINES (LEASE No. 6218) |
| Trade name | **SOO; M & S; SILKSTONE** |
| Output.....tons/annum | 582,000 |
| Location of Mine | Taylorton–Sec. 10; Tp. 2; R. 6; W. of 2nd. |
| Seam | Upper (1) |

| Size | Lump & Cobble | Stove, Egg | Nut | Stoker | Slack (2) |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | + 8 rd. 4 x 8 rd. | 2 x 3, 4 rd. | ½ x 2 rd. | ¼ x 1½ rd. | 0 x 1½ rd. |
| No. of samples | 15 | 5 | 5 | 12 | 5 |
| CHEMICAL PROPERTIES— | | | | | |
| *As Received Basis—* | | | | | |
| *Proximate Analysis—* | | | | | |
| Moisture.....% | 32·5* | 32·5* | 32·5* | 32·5* | 32·5* |
| Ash.....% | 6·7 | 6·6 | 7·0 | 7·2 | 10·5 |
| Volatile matter.....% | 27·1 | 27·7 | 27·7 | 26·9 | 26·1 |
| Fixed carbon.....% | 33·7 | 33·2 | 32·8 | 33·4 | 30·9 |
| Calorific value.....B.t.u./lb. | 7,510 | 7,500 | 7,470 | 7,510 | 7,030 |
| Ash softening temperature.....°F. | 2135 | 2165 | 2220 | 2185 | 2180 |
| *Ultimate Analysis—* | | | | | |
| Carbon.....% | 44·6 | | | | |
| Hydrogen.....% | 3·1 | | | | |
| Nitrogen.....% | 0·7 | | | | |
| Sulphur.....% | 0·5 | 0·4 | 0·5 | 0·3 | 0·5 |
| Oxygen.....% | 11·9 | | | | |
| *Capacity Moisture Basis—* | | | | | |
| *Proximate Analysis—* | | | | | |
| Capacity moisture.....% | 30·2 | 30·2 | 30·2 | 30·2 | 30·2 |
| Ash.....% | 7·0 | 6·8 | 7·3 | 7·5 | 10·8 |
| Volatile matter.....% | 28·1 | 28·6 | 28·7 | 27·9 | 27·0 |
| Fixed carbon.....% | 34·7 | 34·4 | 33·8 | 34·4 | 32·0 |
| Calorific value.....B.t.u./lb. | 7,770 | 7,760 | 7,720 | 7,770 | 7,270 |
| *Caking Properties—* | | | | | |
| Volatile matter residue—950°C..... | Non-agglomerate | | | | |
| Caking index (Gray)..... | 0 | | | | |
| *Swelling Properties—* | | | | | |
| Swelling index (A.S.T.M.)..... | Non-caking | | | | |
| *Classification by Rank—* | | | | | |
| A.S.T.M..... | Lignite | | | | |
| S.V.I..... | 103—Black Lignite | | | | |
| PHYSICAL PROPERTIES— | | | | | |
| Bulk density.....lb./cu. ft. | 44·8 | 44·5 | 39·3 | 40·5 | 41·5 |
| cu. ft./ton | 44·6 | 44·9 | 50·9 | 49·4 | 48·2 |
| Grindability index..... | 53 | 53 | 49 | 55 | 58 |

ANALYSES OF ASH—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 31·1 | 13·3 | 5·4 | 19·4 | 5·8 | — | 6·8 | 0·8 | 0·9 | 0·8 | 16·0 |

REMARKS—

(1) Stripping pit since 1943.
(2) Also "Bug Dust"—0 x ½ in. sq.
* Freshly mined coal contains about 35% moisture.

SASKATCHEWAN
**Souris (Bienfait Division)**

NORTH WEST COAL CO. LTD. (1)
CROWN LEASE No. 7211
**SASKO; PLUS VALUE**
76,000
Bienfait—Sec. 22; Tp. 2; R. 7; W. of 2nd.

SASKATCHEWAN
**Souris (Bienfait Division)**

WESTERN DOMINION COAL MINES LTD.
W. D. MINES—STRIPS PITS (2)
**KLIMAX**
1,019,000
Taylorton—Tp. 1, R. 6; Tp. 2, R. 6, 7 & 8; W. of 2nd.
Upper (No. 2 or 3)

| Cobble | Stove | Nut | Stoker | Slack | Lump | Cobble (3) | Stove | Stoker, Booker (4) | Bug Dust, Slack |
|---|---|---|---|---|---|---|---|---|---|
| +4 | 2 x 4 | 1 x 2 | ½ x 1 | 0 x ½ | + 8 rd. | 4 x 8 rd. | 2 x 4 rd. | | 0 x ½ sq. |
| 1 | 1 | 1 | 4 | 1 | 6 | 18 | 18 | 29 | 4 |
| 32·5† | 32·5† | 32·5† | 32·5† | 32·5† | 32·5† | 32·5† | 32·5† | 32·5† | 32·5† |
| 5·9 | 5·5 | 5·7 | 7·3 | 7·8 | 6·2 | 5·6 | 6·1 | 6·5 | 7·6 |
| 27·6 | 27·3 | 27·6 | 28·2 | 27·0 | 27·3 | 27·9 | 27·5 | 27·2 | 26·8 |
| 34·0 | 34·7 | 34·2 | 32·0 | 32·7 | 34·0 | 34·0 | 33·9 | 33·8 | 33·1 |
| 7,520 | 7,650 | 7,600 | 7,440 | 7,350 | 7,650 | 7,750 | 7,650 | 7,690 | 7,470 |
| 2480 | 2530 | 2560 | 2325 | 2370 | 2280 | 2285 | 2285 | 2280 | 2280 |
| | | | | | 45·3 | | | | |
| | | | | | 2·9 | | | | |
| | | | | | 0·6 | | | | |
| 0·4 | 0·4 | 0·4 | 0·5 | 0·6 | 0·5 | 0·5 | 0·5 | 0·5 | 0·5 |
| | | | | | 12.0 | | | | |
| 29·2 | 29·2 | 29·2 | 29·2 | 29·2 | 29·3 | 29·3 | 29·3 | 29·3 | 29·3 |
| 6·1 | 5·7 | 6·0 | 7·6 | 8·2 | 6·5 | 5·9 | 6·4 | 6·8 | 7·9 |
| 29·0 | 28·7 | 29·0 | 29·6 | 28·3 | 28·6 | 29·2 | 28·8 | 28·5 | 28·1 |
| 35·7 | 36·4 | 35·8 | 33·6 | 34·3 | 35·6 | 35·6 | 35·5 | 35·4 | 34·7 |
| 7,890 | 8,020 | 7,970 | 7,800 | 7,710 | 8,010 | 8,120 | 8,020 | 8,050 | 7,820 |
| | Non-agglomerate | | | | | Non-agglomerate | | | |
| | 0 | | | | | 0 | | | |
| | Non-caking | | | | | Non-caking | | | |
| | Lignite | | | | | Lignite | | | |
| | 97—Brown Lignite | | | | | 100—Black Lignite | | | |
| | 42·3 | 35·0 | 37·5 | 41·0 | 44·0 | 44·7 | 41·5 | 39·9 | 42·8 |
| | 47·3 | 57·1 | 53·3 | 48·8 | 45·5 | 44·7 | 48·2 | 50·1 | 46·7 |
| 59 | 55 | 64 | 55 | 61 | | 46 | 45 | 48 | 56 |

ANALYSES OF ASH—(Klimax)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 22·8 | 14·3 | 5·6 | 22·6 | 6·8 | 0·03 | 6·0 | 1·2 | 1·2 | 0·4 | 17·2 |

REMARKS—

(1) Strip and underground.
(2) Lease Nos. 6233, 6247, 7231, 7234, 7235, 8255-8257, RA726-2, RA826, RA6211-1 to RA6211-9.
(3) Also +4 in. rd.
(4) Stoker prepared in so-called large and small sizes: Large—½ x 2 in. rd., Small—¼, ½ x 1 in. rd. Small stoker size also called Pea size. "Booker" size is usually 1 x 2 in. and prepared specially for Booker space heaters.

† Freshly mined coal contains about 35% moisture.

| | |
|---|---|
| Province | SASKATCHEWAN |
| Area | **Souris (Roche Percee Division)** |
| Operator | PORTAL COALS LTD. (1) |
| Mine | STRIP PITS ON LEASES 6248, 7233, 7238–7242 |
| Trade name | **OLD MAC** |
| Output.....tons/annum | 433,000 |
| Location of Mine | Sec. 30; Tp. 1; R. 6; W. of 2nd. near Roche Percee |
| Seam | Upper |

| Size | Lump, Cobble | Stove | Nut | Stoker | Bug Dust |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | (2) | 2 x 4 rd. | 1 x 2 rd. | (3) | 0 x ½ rd. |
| No. of samples | 6 | 5 | 4 | 9 | 3 |
| CHEMICAL PROPERTIES— | | | | | |
| *As Received Basis* | | | | | |
| *Proximate Analysis*— | | | | | |
| Moisture.....% | 32·5* | 32·5* | 32·5* | 32·5* | 32·5* |
| Ash.....% | 6·7 | 6·5 | 6·9 | 6·9 | 8·0 |
| Volatile matter.....% | 26·8 | 27·1 | 28·3 | 26·2 | 26·4 |
| Fixed carbon.....% | 34·0 | 33·9 | 32·3 | 34·4 | 33·1 |
| Calorific value.....B.t.u./lb. | 7,580 | 7,620 | 7,590 | 7,610 | 7,430 |
| Ash softening temperature.....°F. | 2185 | 2195 | 2380 | 2190 | 2140 |
| *Ultimate Analysis*— | | | | | |
| Carbon.....% | 44·4 | | | | |
| Hydrogen.....% | 3·1 | | | | |
| Nitrogen.....% | 0·8 | | | | |
| Sulphur.....% | 0·5 | 0·5 | 0·5 | 0·5 | 0·5 |
| Oxygen.....% | 12·0 | | | | |
| *Capacity Moisture Basis* | | | | | |
| *Proximate Analysis*— | | | | | |
| Capacity moisture.....% | 31·0 | 31·0 | 31·0 | 31·0 | 31·0 |
| Ash.....% | 6·8 | 6·7 | 7·0 | 7·1 | 8·1 |
| Volatile matter.....% | 27·4 | 27·7 | 28·9 | 26·8 | 27·0 |
| Fixed carbon.....% | 34·8 | 34·6 | 33·1 | 35·1 | 33·9 |
| Calorific value.....B.t.u./lb. | 7,750 | 7,790 | 7,760 | 7,780 | 7,600 |
| *Caking Properties*— | | | | | |
| Volatile matter residue—950°C..... | Non-agglomerate | | | | |
| Caking index (Gray)..... | 0 | | | | |
| *Swelling Properties*— | | | | | |
| Swelling index (A.S.T.M.)..... | Non-caking | | | | |
| *Classification by Rank*— | | | | | |
| A.S.T.M..... | Lignite | | | | |
| S.V.I..... | 106—Black Lignite | | | | |
| PHYSICAL PROPERTIES— | | | | | |
| Bulk density.....lb./cu. ft. | 46·5 | 40·5 | 41·7 | 41·3 | 39·8 |
| cu. ft./ton | 43·0 | 49·4 | 47·9 | 48·4 | 50·3 |
| Grindability index..... | 41 | 48 | 48 | 48 | 59 |

ANALYSES OF ASH—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 33·7 | 12·5 | 5·1 | 17·3 | 4·0 | 0·03 | 10·2 | 1·1 | 0·7 | 0·5 | 13·7 |

REMARKS—

(1) Old Mac Coal Ltd., operators. Subsidiary of Sinclair Mines (Canada) Ltd.
(2) Lump: +8, 10, or 12 in,. Cobble: 4 x 8, 10 or 12 in.
(3) ¼, ½ x 1½ or 2 in. rd.

* When freshly mined the coal contains about 35% moisture.

ALBERTA
**Ardley**

GENERAL
(1)

60,000 (2)
Tps. 37 to 39; R. 22 and 23; W. of 4th.
No. 14 (Ardley); No. 11 (Carbon)—Edmonton Formation

| Lump | stove | Stoker | Slack |
|---|---|---|---|
| +3, 4 | 1 x 3, 4 | ½ x 1, 1¼ | 0 x ½ |
| 2 | 2 | 4 | 2 |
| 20·0 | 20·0 | 20·0 | 22·0 |
| 6·8 | 8·0 | 9·6 | 7·8 |
| 28·2 | 27·3 | 27·8 | 27·4 |
| 45·0 | 44·7 | 42·6 | 42·8 |
| 9,320 | 9,180 | 8,920 | 8,880 |
| 2280 | 2265 | 2335 | 2275 |
| 56·2 | | | |
| 3·6 | | | |
| 0·9 | | | |
| 0·3 | 0·3 | 0·2 | 0·3 |
| 12·2 | | | |
| 17·8 | 17·8 | 17·8 | 17·8 |
| 7·0 | 8·1 | 9·9 | 8·2 |
| 29·0 | 28·0 | 28·6 | 28·8 |
| 46·2 | 46·1 | 43·7 | 45·2 |
| 9,570 | 9,430 | 9·170 | 9·360 |

Non-agglomerate
0

0
Negative

Subbituminous B
103—Lignitic

| | | | |
|---|---|---|---|
| | 46·6 | 43·8 | 44·5 |
| | 43·7 | 45·7 | 44·9 |
| 46 | 45 | 45 | 45 |

REMARKS—
(1) *See* "Coal Mines in Canada"—published annually by the Mineral Resources Division, Mines Branch, Ottawa.
(2) The bulk of output from strip pits.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Ardley** |
| Operator | Allyn Mann Construction Co. |
| Mine | No. 809 (Strip Pit) (1) |
| Trade name | **ECLIPSE** |
| Output.....tons/annum | 47,000 |
| Location of Mine | Sec. 2; Tp. 39; R. 23; W. of 4th. |
| Seam and Formation | Edmonton Formation |

| Size | Lump | Stove | Stoker | Slack |
|---|---|---|---|---|
| Screen limits at mine.....in. | +4 | 1 x 4 | ½ x 1 | 0 x ½ |
| No. of samples | 1 | 1 | 3 | 1 |
| Chemical Properties— | | | | |
| *As Received Basis* | | | | |
| *Proximate Analysis*— | | | | |
| Moisture.....% | 20·0 | 20·0 | 20·0 | 22·0 |
| Ash.....% | 6·5 | 7·0 | 9·8 | 7·5 |
| Volatile matter.....% | 27·8 | 26·8 | 27·4 | 27·1 |
| Fixed carbon.....% | 45·7 | 46·2 | 42·8 | 43·4 |
| Calorific value.....B.t.u./lb. | 9,330 | 9,310 | 8,850 | 8,850 |
| Ash softening temperature.....°F. | 2280 | 2280 | 2360 | 2280 |
| *Ultimate Analysis*— | | | | |
| Carbon.....% | | | | |
| Hydrogen.....% | | | | |
| Nitrogen.....% | | | | |
| Sulphur.....% | 0·2 | 0·2 | 0·2 | 0·3 |
| Oxygen.....% | | | | |
| *Capacity Moisture Basis* | | | | |
| *Proximate Analysis*— | | | | |
| Capacity moisture.....% | 17·8 | 17·8 | 17·8 | 17·8 |
| Ash.....% | 6·7 | 7·2 | 10·1 | 7·9 |
| Volatile matter.....% | 28·6 | 27·5 | 28·2 | 28·5 |
| Fixed carbon.....% | 46·9 | 47·5 | 43·9 | 45·8 |
| Calorific value.....B.t.u./lb. | 9,590 | 9,560 | 9,100 | 9,330 |
| *Caking Properties*— | | | | |
| Volatile matter residue—950°C..... | | Non-agglomerate | | |
| Caking index (Gray)..... | | 0 | | |
| *Swelling Properties*— | | | | |
| Swelling index (A.S.T.M.)..... | | 0 | | |
| Swelling index (F.R L.)..... | | Negative | | |
| *Classification by Rank*— | | | | |
| A.S.T.M..... | | Subbituminous B | | |
| S.V.I..... | | 103—Lignitic | | |
| Physical Properties— | | | | |
| Bulk density.....lb./cu. ft. | | 47·8 | 44·0 | 44·5 |
| cu. ft./ton | | 41·8 | 45·5 | 44·9 |
| Grindability index..... | 47 | 45 | 45 | 44 |

Remarks—

(1) Formerly operated by John W. Sissons—"Pearl of Furnace."

| ALBERTA<br>**Ardley** | | | | ALBERTA<br>**Brooks** | |
|---|---|---|---|---|---|
| Lynass, John H.<br>No. 1734<br>**LYNASS**<br>12,000<br>Delburne—Sec. 20; Tp. 38; R. 23; W. of 4th. | | | | General<br><br><br>53,000<br>Tp. 17; R. 17; W. of 4th. (1) | Tp. 14; R. 13; W. of 4th. (2) |
| Edmonton Formation. | | | | Belly River Formation | |
| Lump | Stove | Stoker | Slack | Mine Run, Egg, Nut, Stoker | Lump, Egg, Nut, Stoker |
| +3 | 1¼ x 3 | ½ x 1¼ | 0 x ½ | | |
| 1 | 1 | 1 | 1 | 39 | 4 |
| 20·0 | 20·0 | 20·0 | 22·0 | 17·0 | 18·5 |
| 7·1 | 8·9 | 9·0 | 8·1 | 13·4 | 8·2 |
| 28·6 | 27·7 | 29·0 | 27·6 | 28·9 | 29·6 |
| 44·3 | 43·4 | 42·0 | 42·3 | 40·7 | 43·7 |
| 9,300 | 9,040* | 9,140 | 8,900 | 9,060 | 9,460 |
| 2280 | 2250 | 2260 | 2270 | 2365 | 2175 |
| 56·0 | | | | 53·5 | |
| 3·6 | | | | 3·6 | |
| 0·9 | | | | 1·1 | |
| 0·3 | 0·3 | 0·4 | 0·3 | 0·7 | 0·5 |
| 12·1 | | | | 10·7 | |
| 17·8 | 17·8 | 17·8 | 17·8 | 17·4 | 18·8 |
| 7·3 | 9·1 | 9·2 | 8·5 | 13·3 | 8·2 |
| 29·3 | 28·4 | 29·8 | 29·1 | 28·8 | 29·5 |
| 45·6 | 44·7 | 43·2 | 44·6 | 40·5 | 43·5 |
| 9,550 | 9,290* | 9,390 | 9,380 | 9,015 | 9,420 |
| | Non-agglomerate | | | Non-agglomerate | Non-agglomerate |
| | 0 | | | 0 | 0 |
| | 0 | | | 0 | 0 |
| | Negative | | | Negative | Negative |
| | Subbituminous B | | | Subbituminous B | Subbituminous B |
| | 103—Lignitic | | | 117—Lignitic | 112—Lignitic |
| | 45·3 | 43·3 | 44·5 | | |
| | 44·2 | 46·2 | 44·9 | | |
| 45 | 45 | 45 | 46 | | 37 |

Remarks—

* Calculated from average mineral-matter-free calorific value.

(1) Kleenbirn Collieries Ltd. in this part of the area.

(2) Coral Coals Ltd. in this portion of Brooks area.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Brooks** |
| Operator | CORAL COALS LTD. |
| Mine | No. 1672 |
| Trade name | **ROLLING HILLS** |
| Output.....tons/annum | 27,000 |
| Location of Mine | Cecil—Sec. 3; Tp. 14; R. 13; W. of 4th. |
| Seam and Formation | Belly River Formation |

| Size | Lump | Egg | Nut | Stoker | Slack |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | + 3¾ sq. | 1¼ x 3¾ sq. | ⅞ x 1¼ sq. | ⅝ x 1⅛ sq. | 0 x ⅝ sq. |
| No. of samples | 1 | 1 | 1 | 1 | 1 |
| CHEMICAL PROPERTIES— | | | | | |
| *As Received Basis—* | | | | | |
| *Proximate Analysis—* | | | | | |
| Moisture.....% | 18·0 | 18·0 | 18·5 | 19·0 | 19·5 |
| Ash.....% | 8·1 | 7·9 | 7·9 | 9·0 | 10·9 |
| Volatile matter.....% | 30·0 | 29·5 | 29·5 | 29·4 | 27·7 |
| Fixed carbon.....% | 43·9 | 44·6 | 44·1 | 42·6 | 41·9 |
| Calorific value.....B.t.u./lb. | 9,540* | 9,570* | 9,510* | 9,280* | 8,950* |
| Ash softening temperature.....°F. | 2220 | 2150 | 2100 | 2230 | 2340 |
| *Ultimate Analysis—* | | | | | |
| Carbon.....% | | | | | |
| Hydrogen.....% | | | | | |
| Nitrogen.....% | | | | | |
| Sulphur.....% | 0·6 | 0·4 | 0·6 | 0·5 | 0·4 |
| Oxygen.....% | | | | | |
| *Capacity Moisture Basis—* | | | | | |
| *Proximate Analysis—* | | | | | |
| Capacity moisture.....% | 18·8 | 18·8 | 18·8 | 18·8 | 18·8 |
| Ash.....% | 8·0 | 7·8 | 7·9 | 9·0 | 11·0 |
| Volatile matter.....% | 29·8 | 29·2 | 29·4 | 29·5 | 27·9 |
| Fixed carbon.....% | 43·4 | 44·2 | 43·9 | 42·7 | 42·3 |
| Calorific value.....B.t.u./lb. | 9,450* | 9,480* | 9,470* | 9,310* | 9,020* |
| *Caking Properties—* | | | | | |
| Volatile matter residue—950°C | | | Non-agglomerate | | |
| Caking index (Gray) | | | 0 | | |
| *Swelling Properties—* | | | | | |
| Swelling index (A.S.T.M.) | | | 0 | | |
| Swelling index (F.R.L.) | | | 0 | | |
| *Classification by Rank—* | | | | | |
| A.S.T.M. | | | Subbituminous B | | |
| S.V.I. | | | 112—Lignitic | | |
| PHYSICAL PROPERTIES— | | | | | |
| Bulk density.....lb./cu. ft. | | | | | |
| cu. ft./ton | | | | | |
| Grindability index | | | | | |
| Resistance to Shattering (4 drops): | | | | | |
| Stability (+ 1½ in.).....% | | | | | |
| Fines (— ½ in.).....% | | | | | |
| Tumbler Test (friability) | | | | | |
| Stability (+ 1 in.).....% | | | | | |
| Abradability (— 10 mesh).....% | | | | | |
| Apparent Specific Gravity | | | | | |

REMARKS—

* Because only single samples of each size have been examined the calorific values were calculated from the average calorific value (dry mineral—matter—free basis) of all the samples.

ALBERTA
**Camrose (District A)**

CAMROSE COLLIERIES LTD.
CAMROSE—No. 1603 (STRIP)
**CAMROSE**
36,000

Camrose—Sec. 29; Tp. 46; R. 19; W. of 4th.
Edmonton Formation

ALBERTA
**Cascade**

THE CANMORE MINES LTD.*
No. 4 (NEW MINE), No. 3 (UPPER MARSH), CAIRNES (1)
**CANMORE SMOKELESS; CANMORE NUSEAM**
234,000

Canmore—Sec. 29; Tp. 24; R. 10; W. of 5th.
No. 4 Seam (New Mine), Upper Marsh, Cairnes Seam—
Kootenay Formation

| Lump | Stove | Nut | Stoker | Slack | Mine Run | Lump, Stove, Nut (2) | Blower Stoker ¼ sq. x 1½ rd. | Slack 0 x ½ sq., 0 x 1½ | Briquettes (3) 2½ x 2⅜ x 1¼ (2·5 oz.) |
|---|---|---|---|---|---|---|---|---|---|
| + 2, + 4 | 2 x 4 | 1¼ x 2 | ¾ x 1¼ | 0 x ¾ | | | | | |
| 4 | 1 | 1 | 1 | 1 | 7 | 21 | 10 | 9 | 31 |
| 24·5 | 24·5 | 24·5 | 24·5 | 24·5 | 1·5 | 1·5 | 1·5 | 2·0 | 1·8 |
| 5·4 | 4·7 | 8·2 | 6·8 | 8·5 | 9·8 | 9·2 | 9·3 | 8·9 | 6·8 |
| 29·3 | 29·6 | 28·2 | 29·6 | 29·3 | 13·7 | 12·9 | 12·9 | 13·3 | 17·1 |
| 40·8 | 41·2 | 39·1 | 39·1 | 37·7 | 75·0 | 76·4 | 76·3 | 75·8 | 74·3 |
| 8,840 | 9,020 | 8,460 | 8,620 | 8,330 | 13,660 | 13,770 | 13,790 | 13,720 | 14,350 |
| 2125 | 2280 | 2300 | 2330 | 2330 | 2260–2850+ | 2500–2850+ | 2640–2850+ | 2270–2850+ | 2850+ |
| | | | | | 80·5 | | | | |
| | | | | | 3·9 | | | | |
| | | | | | 1·3 | | | | |
| 0·4 | 0·4 | 0·4 | 0·4 | 0·4 | 0·7 | 0·6 | 0·6 | 0·7 | 0·7 |
| | | | | | 2·3 | | | | |
| 25·1 | 25·1 | 25·1 | 25·1 | 25·1 | | | | | |
| 5·4 | 4·6 | 8·2 | 6·7 | 8·5 | | | | | |
| 29·1 | 29·4 | 27·9 | 29·4 | 29·1 | | | | | |
| 40·4 | 40·9 | 38·8 | 38·8 | 37·3 | | | | | |
| 8,770 | 8,940 | 8,400 | 8,550 | 8,260 | | | | | |
| | Non-agglomerate | | | | W.A. | W.A. | W.A. | W.A. | Agglomerate |
| | 0 | | | | | 0 | | 0 | |
| | 0 | | | | | | 0 | | 1 |
| | Negative | | | | | | Negative(5) | | (4) |
| | Subbituminous C | | | | Low volatile bituminous to semianthracite | | | | |
| | 106—Lignitic | | | | 204—Meta to Semi-bituminous | | | | |
| | 43·8 | 44·8 | 45·5 | 42·0 | 56·0 | 52·0 | 51·0 | 52·0 | 43·5 |
| | 45·7 | 44·7 | 44·0 | 47·6 | 35·7 | 38·5 | 39·2 | 38·5 | 46·0 |
| 31 | 34 | 31 | 31 | 31 | 74 | | | 85 | |
| | | | | | | | | | 76·7 |
| | | | | | | | | | 9·5 |
| | | | | | | | | | 91·0 |
| | | | | | | | | | 8·7 |
| | | | | | | | | | 1·19 |

ANALYSES OF ASH—(Canmore)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 60·0 | 24·9 | 7·7 | 1·7 | 1·4 | 0·03 | 0·1 | 1·2 | 0·5 | 1·1 | 1·5 |

REMARKS—
(1) Since 1952 operating only No. 4, Marsh and Cairnes seams.
(2) Lump: + 2⅜" rd.; Stove: 1½ x 2⅜" rd.
(3) Commercial briquettes. Also make railway briquettes with less asphalt.
(4) Agglomerate and signs of swelling because of added asphalt binder.
(5) No. 2 seam, now not in operation, exhibited swelling properties.
* Wet cleaning plant in operation for intermediate lump sizes. A washer is to be installed for cleaning smaller sizes.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Cascade** |
| Operator | THE CANMORE MINES LTD. |
| Mine | CAIRNES (1) |
| Trade name | **CANMORE SMOKELESS** |
| Output.....tons/annum | |
| Location of Mine | Tp. 24; R. 10; W. of 5th. |
| Seam and Formation | Cairnes—Kootenay Formation |

| | | |
|---|---|---|
| Size | Lump, Cobble, Stove | Slack |
| Screen limits at mine.....in. | +1½, 2½ x 1½ | 0 x 1½ |
| No. of samples | 3 | 1 |
| CHEMICAL PROPERTIES— | | |
| *As Received Basis* | | |
| *Proximate Analysis*— | | |
| Moisture.....% | 1·5 | 2·0 |
| Ash.....% | 9·5 | 6·0 |
| Volatile matter.....% | 11·3 | 10·3 |
| Fixed carbon.....% | 77·7 | 81·7 |
| Calorific value.....B.t.u./lb. | 13,750 | 14,220 |
| Ash softening temperature.....°F. | 2510 | 2750+ |
| *Ultimate Analysis*— | | |
| Carbon.....% | 81·1 | |
| Hydrogen.....% | 3·6 | |
| Nitrogen.....% | 1·0 | |
| Sulphur.....% | 0·5 | 0·4 |
| Oxygen.....% | 2·8 | |
| *Capacity Moisture Basis* | | |
| *Proximate Analysis*— | | |
| Capacity moisture.....% | | |
| Ash.....% | | |
| Volatile matter.....% | | |
| Fixed carbon.....% | | |
| Calorific value.....B.t.u./lb. | | |
| *Caking Properties*— | | |
| Volatile matter residue—950°C | Non-agglomerate | |
| Caking index (Gray) | 0 | |
| *Swelling Properties*— | | |
| Swelling index (A.S.T.M.) | 0 | |
| Swelling index (F.R.L.) | Negative | |
| *Classification by Rank*— | | |
| A.S.T.M | Semi-anthracite | |
| S.V.I | 261—Border of semi and true Anthracites | |
| PHYSICAL PROPERTIES— | | |
| Bulk density.....lb./cu. ft. | 49·0 | 56·8 |
| cu. ft./ton | 40·8 | 35·2 |
| Grindability index | 56 | 71 |

ANALYSES OF ASH—

| $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 52·7 | 38·2 | 2·9 | 1·1 | 0·6 | 0·1 | 1·9 | 1·2 | 0·7 | 1·7 | 1·2 |

REMARKS—

(1) The seam mined contains harder fractions segregated for the preparation of domestic lump sizes.

ALBERTA
**Castor (Districts B & C)**
GENERAL
(1)

445,000
B:—Tps. 39–41; R. 15, 16.
C:—Tps. 37, 38; R. 41; W. of 4th.
Several Seams—Edmonton Formation
District B District C

| Mine Run, Lump, Egg, Nut | Mine Run |
|---|---|
| 35 | 7 |
| 24·5 | 28·5 |
| 7·1 | 7·8 |
| 29·5 | 28·8 |
| 38·9 | 34·9 |
| 8,710 | 7,810 |
| 2170 | 2310 |
| 50·8 | 46·6 |
| 3·7 | 3·1 |
| 0·9 | 0·9 |
| 0·3 | 0·4 |
| 12·6 | 12·7 |
| 25·6 | 29·5 |
| 7·0 | 7·7 |
| 29·1 | 28·4 |
| 38·3 | 34·4 |
| 8,580 | 7,700 |

Non-agglomerate
0

0
Negative

Subbituminous C
106—Lignitic 98—Lignitic

33

ALBERTA
**Castor (District B)**
BATTLE RIVER COAL CO. LTD. (2)
CORDEL—No. 1046 (STRIP PIT)
**CORDEL**
142,000

Sec. 20; Tp. 40; R. 15; W. of 4th—Halkirk
Lower—Edmonton Formation

| Mine Run | Egg $1\frac{1}{2}$ x 5 | Nut $\frac{1}{2}$ x 2 | Stoker | Slack |
|---|---|---|---|---|
| 5 | 1 | 2 | 1 | 1 |
| 24·0 | 24·0 | 24·0 | 25·0 | 27·0 |
| 7·6 | 7·4 | 8·1 | 8·9 | 8·5 |
| 29·3 | 29·4 | 29·6 | 30·0 | 28·0 |
| 39·1 | 39·2 | 38·3 | 36·1 | 36·5 |
| 8,660* | 8,690* | 8,590* | 8,350* | 8,150* |
| 2225 | 2110 | 2125 | 2170 | 2170 |
| 50·1 | | | | |
| 3·3 | | | | |
| 0·9 | | | | |
| 0·4 | 0·3 | 0·3 | 0·3 | 0·2 |
| 13·7 | | | | |
| 25·7 | 25·7 | 25·7 | 25·7 | 25·7 |
| 7·4 | 7·2 | 7·9 | 8·8 | 8·7 |
| 28·6 | 28·7 | 28·9 | 29·7 | 28·5 |
| 38·3 | 38·4 | 37·5 | 35·8 | 37·1 |
| 8,470* | 8,500* | 8,400* | 8,270* | 8,300* |

Non-agglomerate
0

0
Negative

Subbituminous C
101—Lignitic

| | | | |
|---|---|---|---|
| 44·5 | 43·0 | 42·5 | |
| 44·9 | 46·5 | 47·1 | |

REMARKS—
(1) The main producers of the area are in District B.
(2) Associated with West Canadian Collieries Ltd., formerly Alberta Coal Co. (Battle River).

* In view of the small number of samples the calorific values are calculated on the basis of the average for all the samples.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Castor (District B)** |
| Operator | FORESTBURG COLLIERIES LTD. (1) |
| Mine | No. 1578 (STRIP PIT) |
| Trade name | **DIPLOMAT** |
| Output.....tons/annum | 287,000 |
| Location of Mine | Hastings Coulee—Sec. 36; Tp. 40; R. 16; W. of 4th. |
| Seam and Formation | Edmonton Formation |

| Size | Lump | Stove, Egg | Nut | Stoker Nut | Stoker | Slack |
|---|---|---|---|---|---|---|
| Screen limits at mine.....in. | +4½ rd. | 2 x 4½ rd. | 1¼ sq. x 2 rd. | ½ x 2 rd. | ⅜ x 1¼ sq. | 0 x ½, ⅜ sq. |
| No. of samples | 2 | 2 | 3 | 20 | 3 | 4 |
| **CHEMICAL PROPERTIES—** | | | | | | |
| *As Received Basis* | | | | | | |
| *Proximate Analysis—* | | | | | | |
| Moisture.....% | 24·5 | 24·5 | 25·0 | 25·0 | 25·0 | 25·0 |
| Ash.....% | 6·0 | 6·1 | 7·0 | 7·4 | 7·1 | 7·5 |
| Volatile matter.....% | 29·5 | 30·0 | 29·4 | 29·1 | 28·9 | 28·4 |
| Fixed carbon.....% | 40·0 | 39·4 | 38·6 | 38·5 | 39·0 | 39·1 |
| Calorific value.....B.t.u./lb. | 8,920 | 8,880 | 8,640 | 8,570 | 8,620 | 8,600 |
| Ash softening temperature.....°F. | 2135 | 2130 | 2200 | 2280 | 2175 | 2150 |
| *Ultimate Analysis—* | | | | | | |
| Carbon.....% | 51·3 | | | 50·4 | | |
| Hydrogen.....% | 3·7 | | | 3·1 | | |
| Nitrogen.....% | 0·9 | | | 1·1 | | |
| Sulphur.....% | 0·5 | 0·4 | 0·3 | 0·3 | 0·3 | 0·4 |
| Oxygen | 13·1 | | | 12·7 | | |
| *Capacity Moisture Basis* | | | | | | |
| *Proximate Analysis—* | | | | | | |
| Capacity moisture.....% | 25·5 | 25·5 | 25·5 | 25·5 | 25·5 | 25·5 |
| Ash.....% | 5·9 | 6·0 | 6·9 | 7·4 | 7·1 | 7·4 |
| Volatile matter.....% | 29·1 | 29·7 | 29·2 | 28·9 | 28·7 | 28·2 |
| Fixed carbon.....% | 39·5 | 38·8 | 38·4 | 38·2 | 38·7 | 38·9 |
| Calorific value.....B.t.u./lb. | 8,800 | 8,760 | 8,590 | 8,510 | 8,570 | 8,540 |
| *Caking Properties—* | | | | | | |
| Volatile matter residue—950°C.... | | | Non-agglomerate | | | |
| Caking index (Gray)..... | | | 0 | | | |
| *Swelling Properties—* | | | | | | |
| Swelling index (A.S.T.M.)..... | | | 0 | | | |
| Swelling index (F.R.L.)..... | | | Negative | | | |
| *Classification by Rank—* | | | | | | |
| A.S.T.M..... | | | Subbituminous C | | | |
| S.V.I..... | | | 110—Lignitic | | | |
| **PHYSICAL PROPERTIES—** | | | | | | |
| Bulk density.....lb./cu. ft. | | 44·5 | | | 41·8 | 44·8 |
| cu. ft./ton | | 44·9 | | | 47·8 | 44·6 |
| Grindability index..... | 33 | 34 | | | 30 | 33 |

**ANALYSES OF ASH—**

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 35·7 | 20·0 | 6·9 | 17·9 | 2·8 | 0·1 | 1·8 | 0·4 | 1·0 | 0·4 | 13·7 |

REMARKS—

(1) Subsidiary of Sinclair Mines (Canada) Ltd., Winnipeg, Man.

| ALBERTA<br>**Coalspur (District B)**<br><br>CANADIAN COLLIERIES (DUNSMUIR) LTD. (1)<br>FOOTHILLS—No. 771<br>**FOOTHILLS**<br><br>Foothills—Sec. 24; Tp. 47; R. 20; W. of 5th.<br>Val d'Or–Saunders Formation | | | | ALBERTA<br>**Drumheller I (District A)**<br><br>GENERAL<br>(2)<br><br>304,000<br>Drumheller—Tp. 29; R. 20; W. of 4th.<br>No. 1 (Lower)—Edmonton Formation | | | |
|---|---|---|---|---|---|---|---|
| Lump | Egg, Stove | Nut, Pea, Stoker | Slack | Lump | Egg, Stove | Nut, Pea, Stoker | Slack |
| +4 rd. | 2 sq. x 4 rd. | 1 x 2, $\frac{5}{8}$ x 1 | 0 x $\frac{5}{8}$, 1 | +4, 4½, 5 rd. | 1½, 2, 3 x 4, 5 rd. | (3) | 0 x ¾, 1½, 2 sq. |
| 15 | 6 | 2 | 3 | 17 | 14 | 48 | 10 |
| 8·5 | 8·5 | 8·5 | 8·5 | 16·0 | 16·0 | 16·0 | 17·0 |
| 10·0 | 11·1 | 10·6 | 11·5 | 6·8 | 8·5 | 11·7 | 12·0 |
| 34·1 | 33·7 | 34·5 | 34·0 | 31·1 | 30·5 | 29·3 | 28·9 |
| 47·4 | 46·7 | 46·4 | 46·0 | 46·1 | 45·0 | 43·0 | 42·1 |
| 10,990 | 10,810 | 10,900 | 10,810 | 10,180 | 9,970 | 9,530 | 9,230 |
| 2180 | 2150 | 2135 | 2170 | 2150 | 2270 | 2265 | 2300 |
| 63·7 | | | | 58·6 | | | |
| 4·1 | | | | 4·0 | | | |
| 0·8 | | | | 1·1 | | | |
| 0·2 | 0·2 | 0·3 | 0·3 | 0·4 | 0·4 | 0·4 | 0·4 |
| 12·7 | | | | 13·1 | | | |
| 8·5 | 8·5 | 8·5 | 8·5 | 16·7 | 16·7 | 16·7 | 16·7 |
| 10·0 | 11·1 | 10·6 | 11·5 | 6·7 | 8·4 | 11·6 | 12·0 |
| 34·1 | 33·7 | 34·5 | 34·0 | 30·8 | 30·2 | 29·1 | 29·0 |
| 47·4 | 46·7 | 46·4 | 46·0 | 45·8 | 44·7 | 42·6 | 42·3 |
| 10,990 | 10,810 | 10,900 | 10,810 | 10,100 | 9,890 | 9,450 | 9,260 |
| Weak-agglomerate<br>0 | | | | Non-agglomerate<br>0 | | | |
| 0<br>Negative | | | | 0<br>Negative | | | |
| High volatile C bituminous<br>123—Subbituminous | | | | Subbituminous B<br>115—Lignitic | | | |
| 48·8 | 48·8 | 49·8 | 51·0 | 53·2 | 49·2 | 45·0 | 53·1 |
| 41·0 | 41·0 | 40·2 | 39·2 | 37·6 | 40·7 | 44·4 | 37·7 |
| 44 | | | 44 | 36 | 35 | 36 | 37 |

ANALYSES OF ASH (Foothills)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 46.3 | 16.7 | 6.9 | 19.7 | 1.7 | 0.07 | 1.0 | 0.7 | 0.1 | 0.4 | 6.2 |

ANALYSES OF ASH (Drumheller I)—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 48·9 | 21·6 | 8·2 | 8·5 | 2·2 | 0·2 | 4·0 | 0·9 | 1·5 | 0·5 | 3·7 |

REMARKS—

(1) Formerly Foothills Collieries Ltd.
(2) *See* "Coal Mines in Canada"—Publication No. 4-1, Mineral Resources Division, Mines Branch, Ottawa.
(3) Nut—1, 1¼ x 1¾, 2 sq. Pea, stoker—⅜, ¾ x 1¼, 1½ sq.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Drumheller I (District A)** |
| Operator | CENTURY COALS LIMITED |
| Mine | COMMANDER—No. 422 |
| Trade name | **COMMANDER** |
| Output.....tons/annum | 295,000 (1) |
| Location of Mine | Drumheller—Sec. 9; Tp. 29; R. 20; W. of 4th. |
| Seam and Formation | No. 1—Edmonton Formation |

| Size | Lump | Stove | Nut | Stoker | Nut Slack, Slack |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | +4, 4½ | 1½, 2 x 4 | 1¼ x 2 | ¾ x 1¼ | 0 x 1½, ¾ |
| No. of samples | 3 | 3 | 1 | 1 | 3 |
| CHEMICAL PROPERTIES— | | | | | |
| *As Received Basis* | | | | | |
| *Proximate Analysis*— | | | | | |
| Moisture.....% | 16·0 | 16·0 | 16·0 | 16·0 | 15·5 |
| Ash.....% | 6·7 | 7·6 | 9·9 | 11·4 | 12·0 |
| Volatile matter.....% | 31·3 | 31·5 | 30·9 | 30·3 | 29·8 |
| Fixed carbon.....% | 46·0 | 44·9 | 43·2 | 42·3 | 42·7 |
| Calorific value.....B.t.u./lb. | 10,010 | 9,920 | 9,440 | 9,290* | 9,310 |
| Ash softening temperature.....°F. | 2280 | 2230 | 2100 | 2480 | 2445 |
| *Ultimate Analysis*— | | | | | |
| Carbon.....% | 58·2 | | | | |
| Hydrogen.....% | 4·0 | | | | |
| Nitrogen.....% | 1·1 | | | | |
| Sulphur.....% | 0·4 | 0·4 | 0·3 | 0·3 | 0·3 |
| Oxygen.....% | 13·6 | | | | |
| *Capacity Moisture Basis* | | | | | |
| *Proximate Analysis*— | | | | | |
| Capacity moisture.....% | 16·6 | 16·6 | 16·6 | 16·6 | 16·6 |
| Ash.....% | 6·7 | 7·5 | 9·8 | 11·3 | 11·8 |
| Volatile matter.....% | 31·1 | 31·3 | 30·7 | 30·1 | 29·4 |
| Fixed carbon.....% | 45·6 | 44·6 | 42·9 | 42·0 | 42·2 |
| Calorific value.....B.t.u./lb. | 9,940 | 9,840 | 9,370 | 9,220* | 9,190 |
| *Caking Properties*— | | | | | |
| Volatile matter residue—950°C..... | Non-agglomerate | | | | |
| Caking index (Gray)..... | 0 | | | | |
| *Swelling Properties*— | | | | | |
| Swelling index (A.S.T.M.)..... | 0 | | | | |
| Swelling index (F.R.L.)..... | Negative | | | | |
| *Classification by Rank*— | | | | | |
| A.S.T.M..... | Subbituminous B | | | | |
| S.V.I..... | 108—Lignitic | | | | |
| PHYSICAL PROPERTIES— | | | | | |
| Bulk density.....lb./cu. ft. | 52·0 | 49·0 | | | 53·5 |
| cu. ft./ton | 38·5 | 40·8 | | | 37·4 |
| Grindability index..... | 37 | 33 | 36 | 36 | 37 |

ANALYSES OF ASH (Commander)—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 42·9 | 21·2 | 15·0 | 8·3 | 2·3 | 0·3 | 3·5 | 1·6 | 1·6 | 0·4 | 3·0 |

REMARKS:

(1) Output for both Commander and Atlas mines.

* Calculated from average dry mineral-matter-free calorific value of all samples.

ALBERTA
**Drumheller I (District A)**

RED DEER VALLEY COAL CO. LTD.
RED DEER VALLEY—No. 422

**GLOCOAL & "10-5"**
122,000
Nacmine—Sec. 7; Tp. 29; R. 20; W. of 4th.
No. 1—Edmonton Formation

ALBERTA
**Drumheller II (Districts A & B)**
**(Rosedale, Wayne & Willow Creek)**
GENERAL
(2)

294,000
Drumheller—Tp. 29; R. 20; W. of 4th. Rosedale, Wayne, Willow Creek—Tp. 28; R. 18,19,20; W. of 4th.
No. 1 (Lower) and No. 5 (Upper)—
Edmonton Formation

| Lump | Egg, Stove | Nut, Pea, Stoker | Slack | Lump | Egg, Stove | Nut | Stoker | Slack |
|---|---|---|---|---|---|---|---|---|
| +1¼, +5 rd. | 2 x 5 rd. | (1) | 0 x ½, 2 | +4, 5, 5½ rd. | 1, 2 x 4, 5, 6 rd. | ¾, 1, 1½ x 1½, 2 | ⅜, ¾ x 1, 1½ | 0 x ¾, 1, 1½, 2 sq. |
| 8 | 11 | 46 | 4 | 67 | 17 | 7 | 13 | 9 |
| 16·0 | 16·0 | 16·0 | 17·0 | 17·0 | 17·0 | 17·0 | 17·0 | 18·0 |
| 6·5 | 8·5 | 11·7 | 11·3 | 7·3 | 7·7 | 8·9 | 12·1 | 11·8 |
| 30·9 | 30·7 | 29·1 | 28·9 | 31·1 | 30·6 | 29·8 | 29·0 | 28·9 |
| 46·6 | 44·8 | 43·2 | 42·8 | 44·6 | 44·7 | 44·3 | 41·9 | 41·3 |
| 10,240 | 9,940 | 9,530 | 9,320 | 9,900 | 9,810 | 9,650 | 9,220 | 9,080 |
| 2130 | 2250 | 2270 | 2265 | 2115 | 2175 | 2185 | 2350 | 2280 |
| 58·4 | | | | 57·2 | | | | |
| 4·1 | | | | 3·7 | | | | |
| 1·1 | | | | 1·3 | | | | |
| 0·4 | 0·4 | 0·4 | 0·4 | 0·5 | 0·4 | 0·4 | 0·5 | 0·5 |
| 13·5 | | | | 13·0 | | | | |
| 16·7 | 16·7 | 16·7 | 16·7 | 18·3 | 18·3 | 18·3 | 18·3 | 18·3 |
| 6·4 | 8·4 | 11·6 | 11·3 | 7·2 | 7·6 | 8·8 | 11·9 | 11·8 |
| 30·7 | 30·5 | 28·9 | 29·0 | 30·6 | 30·1 | 29·3 | 28·5 | 28·8 |
| 46·2 | 44·4 | 42·8 | 43·0 | 43·9 | 44·0 | 43·6 | 41·3 | 41·1 |
| 10,150 | 9,860 | 9,450 | 9,360 | 9,740 | 9,660 | 9,500 | 9,080 | 9,050 |
| Non-agglomerate 0 | | | | Non-agglomerate 0 | | | | |
| 0 Negative | | | | 0 Negative | | | | |
| Subbituminous B 115—Lignitic | | | | Subbituminous B 113—Lignitic | | | | |
| 52·3 | 49·2 | 47·5 | 53·5 | 50·7 | 48·5 | 47·2 | 45·5 | 52·0 |
| 38·2 | 40·7 | 42·1 | 37·4 | 39·4 | 41·2 | 42·4 | 44·0 | 38·5 |
| 33 | 37 | 36 | 37 | 34 | 32 | 34 | 34 | 34 |

ANALYSES OF ASH (Glocoal & "10-5")—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 51·2 | 20·7 | 4·7 | 8·7 | 2·4 | 0·2 | 4·6 | 0·4 | 1·5 | 0·4 | 6·0 |

ANALYSES OF ASH (Drumheller II)—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 48·8 | 20·5 | 6·5 | 9·1 | 1·9 | 0·05 | 4·3 | 0·5 | 1·0 | 0·4 | 5·0 |

REMARKS—
(1) Nut—1¼ x 2 in. rd; Pea—⅜ x 1¼ in.; Stoker—⅜ x 2 in.
(2) Main producers—
Century Coals Ltd.—Commander—No. 422.
Midland Coal Mining Co. Ltd.— No. 367.
Star Coal Mine Ltd— No. 436.
Wayne Coals Ltd. No. 1570.
Sands, Mark & Partners— No. 1666.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Drumheller II (District A)** |
| Operator | Midland Coal Mining Co. Ltd. |
| Mine | Midland and Mercury—No. 367 |
| Trade name | **MIDLAND; MERCURY** |
| Output.....tons/annum | 115,000 |
| Location of Mine | Midlandvale—Sec. 9; Tp. 29; R. 20; W. of 4th. |
| Seam and Formation | No. 1—Edmonton Formation |

| Size | Lump | Egg, Stove | Nut | Nut Pea (Stoker) | Slack |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | + 5 rd. (1) | 2 x 6 rd. 1 x 5 rd. | 1 x 1¾ | ⅜ x 1½ rd. | 0 x 1½ rd. |
| No. of samples | 8 | 8 | 4 | 12 | 3 |
| **Chemical Properties—** | | | | | |
| *As Received Basis—* | | | | | |
| *Proximate Analysis—* | | | | | |
| Moisture.....% | 17·0 | 17·0 | 17·0 | 17·0 | 18·0 |
| Ash.....% | 7·2 | 6·7 | 8·5 | 11·7 | 12·7 |
| Volatile matter.....% | 30·5 | 30·5 | 30·0 | 29·1 | 27·7 |
| Fixed carbon.....% | 45·3 | 35·8 | 44·5 | 42·2 | 41·6 |
| Calorific value.....B.t.u./lb. | 9,880 | 9,970 | 9,700 | 9,320 | 8,950 |
| Ash softening temperature.....°F. | 2120 | 2125 | 2210 | 2300 | 2345 |
| *Ultimate Analysis—* | | | | | |
| Carbon.....% | 57·9 | | | | |
| Hydrogen.....% | 3·7 | | | | |
| Nitrogen.....% | 1·1 | | | | |
| Sulphur.....% | 0·4 | 0·4 | 0·4 | 0·4 | 0·4 |
| Oxygen.....% | 12·7 | | | | |
| *Capacity Moisture Basis—* | | | | | |
| *Proximate Analysis—* | | | | | |
| Capacity moisture.....% | 17·7 | 17·7 | 17·7 | 17·7 | 17·7 |
| Ash.....% | 7·2 | 6·6 | 8·4 | 11·6 | 12·7 |
| Volatile matter.....% | 30·3 | 30·2 | 29·7 | 28·9 | 27·8 |
| Fixed carbon.....% | 44·8 | 45·5 | 44·2 | 41·8 | 41·8 |
| Calorific value.....B.t.u./lb. | 9,800 | 9,890 | 9,610 | 9,240 | 8,990 |
| *Caking Properties—* | | | | | |
| Volatile matter residue—950°C | Non-agglomerate | | | | |
| Caking index (Gray) | 0 | | | | |
| *Swelling Properties—* | | | | | |
| Swelling index (A.S.T.M.) | 0 | | | | |
| Swelling index (F.R.L.) | Negative | | | | |
| *Classification by Rank—* | | | | | |
| A.S.T.M | Subbituminous B | | | | |
| S.V.I | 110—Lignitic | | | | |
| **Physical Properties—** | | | | | |
| Bulk density.....lb./cu. ft. | | 47·4 | 47·2 | | 50·0 |
| cu. ft./ton | | 42·2 | 42·4 | | 40·0 |
| Grindability index | 35 | 35 | 34 | 35 | 36 |

**Analyses of Ash—**

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 48·4 | 20·1 | 9·6 | 8·8 | 2·0 | 0·1 | 2·4 | 0·5 | 0·6 | 0·4 | 5·2 |

Remarks—

(1) Also 5 x 10 in.

ALBERTA
**Drumheller II (District B)**

SASKATCHEWAN FEDERATED CO-OPS LTD.
HY-GRADE—No. 1421
**HY-GRADE**
87,000
Drumheller—Sec. 11; Tp. 29; R. 20; W. of 4th.
No. 1—Edmonton Formation

ALBERTA
**Drumheller II (District B)**

STAR COAL MINE LTD. (2)
STAR No. 436
**STAR**
87,000
Sec. 28; Tp. 28; R. 19; W. of 4th.
No. 1—Edmonton Formation

| Lump | Stove (1) | Nut | Stoker | Nut Slack, Slack | Lump | Egg | Slack |
|---|---|---|---|---|---|---|---|
| +4, +5½ rd. | 2 x 4 | 1½ x 2 | ¾ x 1½ | 0 x 1½ B., ¾ | + 4 rd. | 2 x 4 rd. | 0 x 1½, 2 |
| 4 | 3 | 1 | 1 | 3 | 29 | 1 | 3 |
| 17·0 | 17·0 | 17·0 | 17·0 | 18·0 | 17·0 | 17·0 | 18·0 |
| 6·7 | 8·0 | 9·7 | 12·5 | 10·4 | 7·2 | 9·5 | 12·1 |
| 31·4 | 30·5 | 29·5 | 28·8 | 29·3 | 31·2 | 30·4 | 29·3 |
| 44·9 | 44·5 | 43·8 | 41·7 | 42·3 | 44·6 | 43·1 | 40·6 |
| 9,970 | 9,760 | 9,520* | 9,120* | 9,240 | 9,950 | 9,530 | 9,050 |
| 2150 | 2290 | 2280 | 2400 | 2260 | 2110 | 2300 | 2235 |
| 58·4 | | | | | 58·3 | | |
| 3·5 | | | | | 3·2 | | |
| 1·2 | | | | | 1·0 | | |
| 0·4 | 0·4 | 0·5 | 0·7 | 0·6 | 0·5 | 0·3 | 0·5 |
| 12·8 | | | | | 12·8 | | |
| 18·0 | 18·0 | 18·0 | 18·0 | 18·0 | 18·6 | 18·6 | 18·6 |
| 6·6 | 6·9 | 9·6 | 12·4 | 10·4 | 7·1 | 9·3 | 12·0 |
| 31·0 | 30·1 | 29·2 | 28·5 | 29·3 | 30·6 | 29·8 | 29·1 |
| 44·4 | 44·0 | 43·2 | 41·1 | 42·3 | 43·7 | 42·3 | 40·3 |
| 9,850 | 9,650 | 9,390* | 8,980* | 9,240 | 9,760 | 9,350 | 8,990 |
| Non-agglomerate | | | | | Non-Agglomerate | | |
| 0 | | | | | 0 | | |
| 0 | | | | | 0 | | |
| Negative | | | | | Negative | | |
| Subbituminous B | | | | | Subbituminous B | | |
| 113—Lignitic | | | | | 116—Lignitic | | |
| 52·0 | 49·5 | | | | 50·5 | | 54·0 |
| 38·5 | 40·4 | | | | 39·6 | | 37·0 |
| 35 | 32 | 33 | 32 | 34 | 32 | 29 | 34 |

ANALYSES OF ASH—(Hy-Grade)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 48·0 | 21·0 | 6·5 | 10·6 | 2·0 | 0·01 | 5·1 | 0·6 | 1·4 | 0·3 | 1·5 |

ANALYSES OF ASH—(3)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 45·4 | 21·4 | 6·5 | 9·0 | 1·7 | 0·1 | 4·5 | 0·5 | 1·1 | 0·6 | 7·0 |

REMARKS—
(1) Also 2½ x 5½ in. (Referred to sometimes as Egg size).
(2) Formerly Rosedale Collieries Ltd. (Rosedale mine closed down).
(3) Ash analysis represents Rosedale and Star mines.
* Calculated from average mineral-matter-free calorific value.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Drumheller II (District A)** |
| Operator | WAYNE COALS LTD. (1) |
| Mine | No 1570 |
| Trade name | **SOVEREIGN** |
| Output.....tons/annum | 5,000 |
| Location of Mine | Wayne—Sec. 7; Tp. 28; R. 19; W. of 4th. |
| Seam and Formation | (2)—Edmonton Formation |

| Size | Lump | Egg | Nut | Stoker | Slack |
|---|---|---|---|---|---|
| Screen limits at mine.....in | +4 | 2 x 4 | 1 x 2 | ½ x 1 | 0 x ½ |
| No of samples | 2 | 1 | 2 | 1 | 1 |
| CHEMICAL PROPERTIES— | | | | | |
| *As Received Basis* | | | | | |
| *Proximate Analysis*— | | | | | |
| Moisture.....% | 17·0 | 17·0 | 17·0 | 17·0 | 18·0 |
| Ash.....% | 7·3 | 8·0 | 8·5 | 7·7 | 11·7 |
| Volatile matter.....% | 31·8 | 32·8 | 31·5 | 30·9 | 29·4 |
| Fixed carbon.....% | 43·9 | 42·2 | 43·0 | 44·4 | 40·9 |
| Calorific value.....B t u /lb | 9,620 | 9,560 | 9,440 | 9,830 | 8,890 |
| Ash softening temperature.....°F | 2155 | 2200 | 2170 | 2100 | 2280 |
| *Ultimate Analysis*— | | | | | |
| Carbon.....% | | | | | |
| Hydrogen.....% | | | | | |
| Nitrogen.....% | | | | | |
| Sulphur.....% | 0·5 | 0·5 | 0·5 | 0·5 | 0·6 |
| Oxygen.....% | | | | | |
| *Capacity Moisture Basis* | | | | | |
| *Proximate Analysis*— | | | | | |
| Capacity moisture.....% | 17·0 | 17·0 | 17·0 | 17·0 | 17·0 |
| Ash.....% | 7·3 | 8·0 | 8·5 | 7·7 | 11·9 |
| Volatile matter.....% | 31·8 | 32·8 | 31·5 | 30·9 | 29·8 |
| Fixed carbon.....% | 43·9 | 42·2 | 43·0 | 44·4 | 41·3 |
| Calorific value.....B t u /lb | 9,620 | 9,560 | 9,440 | 9,830 | 9,000 |
| *Caking Properties*— | | | | | |
| Volatile matter residue—950°C | | | Non-agglomerate | | |
| Caking index (Gray) | | | 0 | | |
| *Swelling Properties*— | | | | | |
| Swelling index (A.S.T.M ) | | | 0 | | |
| Swelling index (F.R.L.) | | | Negative | | |
| *Classification by Rank*— | | | | | |
| A.S.T.M | | | Subbituminous B | | |
| S.V.I | | | 104—Lignitic | | |
| PHYSICAL PROPERTIES— | | | | | |
| Bulk density.....lb./cu. ft. | | 48·3 | 46·0 | 46·0 | 50·5 |
| cu. ft./ton | | 41·4 | 43·5 | 43·5 | 39·6 |
| Grindability index | 36 | 36 | 36 | 36 | 40 |

REMARKS—

(1) First listed in 1952. This mine is close to where mine No. 703 (Wayne Coal Producers Assn. Ltd.) was operating, this latter mine being closed down in 1941.

(2) Probably No. 5 seam.

ALBERTA
**Drumheller III (District C)**
**(East Coulee, Willow Creek, N. Drumheller)**
GENERAL
(1)
307,000
East Coulee and Willow Creek—Tp. 27, 28; R. 18, 19; W. of 4th;
N. Drumheller—Tp. 29; R. 30; W. of 4th.
No. 2—Edmonton Formation

| Lump | Egg, Stove | Nut, Stoker | Slack |
|---|---|---|---|
| 2, 3, 4, 5 rd. | 2, 2½ x 4, 5 rd. | (2) | 0 x ½, ¾, 1½ sq. |
| 22 | 19 | 24 | 17 |
| 18·0 | 18·0 | 18·0 | 19·0 |
| 7·3 | 7·6 | 9·8 | 9·9 |
| 31·1 | 30·7 | 30·2 | 29·5 |
| 43·6 | 43·7 | 42·0 | 41·6 |
| 9,580 | 9,510 | 9,150 | 9,110 |
| 2040 | 2070 | 2150 | 2090 |
| 0·6 | 0·6 | 0·6 | 0·7 |
| 19·2 | 19·2 | 19·2 | 19·2 |
| 7·2 | 7·5 | 9·7 | 9·9 |
| 30·6 | 30·3 | 29·8 | 29·4 |
| 43·0 | 43·0 | 41·3 | 41·5 |
| 9,440 | 9,370 | 9,020 | 9,090 |

Non-agglomerate
0

0
Negative

Subbituminous B
108—Lignitic

| | | | |
|---|---|---|---|
| | 48·3 | 47·0 | 49·5 |
| | 41·4 | 42·5 | 40·5 |
| 32 | 31 | 32 | 34 |

ALBERTA
**Drumheller III (District B)**
AETNA COALS LTD.
AETNA—No. 1511 (UNDERGROUND AND STRIP)
AETNA
3,000
Cambria—Sec. 22; Tp. 28; R. 19; W. of 4th.

No. 1—Edmonton Formation

| Lump | Stove, Egg | Nut, Slack |
|---|---|---|
| +4 rd. | 1¾ sq. x 4½ rd., 2 x 4 rd. | 0 x 1¾ sq. |
| 4 | 2 | 2 |
| 16·9 | 16·3 | 19·0 |
| 7·6 | 9·2 | 11·9 |
| 31·3 | 31·2 | 28·3 |
| 44·2 | 43·3 | 40·8 |
| 9,770 | 9,630 | 8,990 |
| 2125 | 2145 | 2120 |
| 0·6 | 0·6 | 0·7 |
| 17·7 | 17·7 | 17·7 |
| 7·5 | 9·1 | 12·1 |
| 31·0 | 30·7 | 28·8 |
| 43·8 | 42·5 | 41·4 |
| 9,680 | 9,470 | 9,140 |

Non-agglomerate
0

0
Negative

Subbituminous B
109—Lignitic

| | | |
|---|---|---|
| | 48·2 | 55·5 |
| | 41·5 | 36·0 |
| 37 | 38 | |

ANALYSES OF ASH (Drumheller III—General)—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 40·8 | 19·1 | 12·4 | 7·4 | 1·5 | 0·4 | 4·3 | 1·2 | 0·5 | 0·5 | 8·0 |

REMARKS—
(1) The above excludes coals in this area from No. 1 seam, such as Aetna, which exhibit a lower capacity moisture at 17·7% and thus a higher calorific value.
(2) Nut—1¼ x 2 in. sq., Stoker—⅜, ¾ x 1¼ in. sq.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Drumheller III (District C)** |
| Operator | Amalgamated Coals Ltd. (1) |
| Mine | Western Monarch—No. 1573 |
| Trade name | **WESTERN MONARCH** |
| Output.....tons/annum | 144,000 |
| Location of Mine | East Coulee—Sec. 20; Tp. 27; R. 18; W. of 4th. |
| Seam and Formation | No. 2 (East Coulee)—Edmonton Formation |

| Size | Lump | Stove, Egg | Nut | Stoker | Slack |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | + 2 bar, + 4 | 2 x 4 | 1¼ sq. x 2 bar | ¾, ⅝ x 1¼ sq. | 0 x 1¼, ¾ sq. |
| No. of samples | 5 | 3 | 1 | 2 | 4 |
| **Chemical Properties—** | | | | | |
| *As Received Basis—* | | | | | |
| *Proximate Analysis—* | | | | | |
| Moisture.....% | 18·0 | 18·0 | 18·0 | 18·0 | 19·0 |
| Ash.....% | 7·6 | 8·1 | 11·6 | 10·8 | 10·8 |
| Volatile matter.....% | 31·2 | 30·8 | 29·8 | 30·4 | 29·8 |
| Fixed carbon.....% | 43·2 | 43·1 | 40·6 | 40·8 | 40·4 |
| Calorific value.....B.t.u./lb. | 9,560 | 9,420 | 8,880 | 9,070 | 8,990 |
| Ash softening temperature.....°F. | 2075 | 2115 | 2300 | 2220 | 2170 |
| *Ultimate Analysis—* | | | | | |
| Carbon.....% | 55·8 | | | | |
| Hydrogen.....% | 4·6 | | | | |
| Nitrogen.....% | 1·1 | | | | |
| Sulphur.....% | 0·7 | 0·7 | 0·4 | 0·7 | 0·9 |
| Oxygen.....% | 12·2 | | | | |
| *Capacity Moisture Basis—* | | | | | |
| *Proximate Analysis—* | | | | | |
| Capacity moisture.....% | 19·3 | 19·3 | 19·3 | 19·3 | 19·3 |
| Ash.....% | 7·5 | 8·0 | 11·4 | 10·6 | 10·8 |
| Volatile matter.....% | 30·7 | 30·3 | 29·4 | 29·9 | 29·7 |
| Fixed carbon.....% | 42·5 | 42·4 | 39·9 | 40·2 | 40·2 |
| Calorific value.....B.t.u./lb. | 9,410 | 9,270 | 8,740 | 8,930 | 8,950 |
| *Caking Properties—* | | | | | |
| Volatile matter residue—950°C | | | Non-agglomerate | | |
| Caking index (Gray) | | | 0 | | |
| *Swelling Properties—* | | | | | |
| Swelling index (A.S.T.M.) | | | 0 | | |
| Swelling index (F.R.L.) | | | Negative | | |
| *Classification by Rank—* | | | | | |
| A.S.T.M. | | | Subbituminous B | | |
| S.V.I. | | | 105—Lignitic | | |
| **Physical Properties—** | | | | | |
| Bulk density.....lb./cu. ft. | | 46·8 | | | 51·0 |
| cu. ft./ton | | 42·7 | | | 37·3 |
| Grindability index | 29 | 31 | 29 | 34 | 34 |

**Analyses of Ash—**

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 47·2 | 17·0 | 10·1 | 7·4 | 1·4 | 0·2 | 4·5 | 1·2 | 0·5 | 0·4 | 7·1 |

Remarks—

(1) Formerly The Monarch Coal Mining Co. Ltd.

| ALBERTA<br>**Drumheller III (District C)**<br><br>CENTURY COALS LTD.<br>ATLAS—No. 1484<br>**WILDFIRE**<br><br>East Coulee—Sec. 21; Tp. 27; R. 18; W. of 4th.<br>No. 2 (East Coulee)—Edmonton Formation | | | | | ALBERTA<br>**Drumheller III (District C)**<br><br>MURRAY COLLIERIES LTD.<br>No. 1491<br>**MURRAY**<br>154,000<br>East Coulee—Sec. 29; Tp. 27; R. 18; W. of 4th.<br>No. 2 (East Coulee)—Edmonton Formation | | | |
|---|---|---|---|---|---|---|---|---|
| Lump | Egg, Stove | Nut | Stoker | Slack | Lump | Egg or Stove, Nut (1) | Stoker Nut | Slack |
| + 5 rd. | 2½ x 5 rd., 2 x 4 | 1¼ x 2 | ⅜ x 1 rd., ¼ x ¾ | 0 x ¾, 1½ | + 5 rd. | | ⅜ x 1¼ sq. | 0 x ½, 1¼ sq. |
| 11 | 5 | 2 | 2 | 5 | 6 | 11 | 17 | 8 |
| 18·0 | 18·0 | 18·0 | 18·0 | 19·0 | 18·0 | 18·0 | 18·0 | 19·0 |
| 7·2 | 6·9 | 7·4 | 9·0 | 9·0 | 7·0 | 7·9 | 10·2 | 10·0 |
| 31·0 | 30·5 | 30·8 | 30·6 | 29·6 | 31·1 | 30·8 | 29·2 | 29·3 |
| 43·8 | 44·6 | 43·8 | 42·4 | 42·4 | 43·9 | 43·3 | 42·6 | 41·7 |
| 9,570 | 9,620 | 9,460 | 9,170 | 9,160 | 9,590 | 9,480 | 9,190 | 9,090 |
| 2040 | 2095 | 2080 | 2070 | 2030 | 1995 | 2000 | 2070 | 2035 |
| 55·2 | | | | | 55·6 | | | |
| 3·6 | | | | | 3·7 | | | |
| 1·1 | | | | | 1·1 | | | |
| 0·5 | 0·5 | 0·6 | 0·6 | 0·6 | 0·6 | 0·6 | 0·6 | 0·6 |
| 14·4 | | | | | 14·0 | | | |
| 19·4 | 19·4 | 19·4 | 19·4 | 19·4 | 18·9 | 18·9 | 18·9 | 18·9 |
| 7·1 | 6·8 | 7·3 | 8·9 | 8·9 | 7·0 | 7·9 | 10·0 | 10·0 |
| 30·5 | 30·0 | 30·2 | 30·1 | 29·4 | 30·7 | 30·4 | 28·9 | 29·4 |
| 43·0 | 43·8 | 43·1 | 41·6 | 42·3 | 43·4 | 42·8 | 42·2 | 41·7 |
| 9,410 | 9,460 | 9,300 | 9,020 | 9,120 | 9,490 | 9,370 | 9,090 | 9,100 |
| Non-agglomerate<br>0<br><br>0<br>Negative | | | | | Non-agglomerate<br>0<br><br>0<br>Negative | | | |
| Subbituminous B<br>106—Lignitic | | | | | Subbituminous B<br>105—Lignitic | | | |
| | 49·0<br>40·8 | 47·5<br>42·1 | | 47·5<br>42·1 | | 49·0<br>40·8 | 46·5<br>43·0 | 50·0<br>40·0 |
| 34 | 31 | 32 | 31 | 32 | 34 | 32 | | 34 |

ANALYSES OF ASH—(Wildfire)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 26·7 | 13·1 | 25·7 | 10·0 | 2·1 | 0·9 | 4·7 | 0·9 | 0·6 | 0·4 | 12·6 |

ANALYSES OF ASH—(Murray)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 33·8 | 23·4 | 10·2 | 11·3 | 1·9 | 0·5 | 6·0 | 1·0 | 0·7 | 0·5 | 8·3 |

REMARKS—

(1) Egg or Stove—2 x 4 in. rd.
Nut—1¼ sq. x 2 in.

| | | |
|---|---|---|
| Province | ALBERTA | ALBERTA |
| Area | **Edmonton** | **Edmonton** |
| Operator | GENERAL | GENERAL |
| Mine | DISTRICTS A & B | OUTSIDE DISTRICT A |
| Trade name | (1) | (1) |
| Output.....tons/annum | 172,000 | 61,000 |
| Location of Mine | Tp. 52–56; R. 23, 24 & 25; W. of 4th. | Tp. 56; R. 26; W. of 4th. |
| Seam and Formation | Edmonton Formation | Edmonton Formation |

| Size | Lump, Stove, Egg | Nut, Pea, Stoker | Slack | Lump, Egg | Nut Stoker | Slack |
|---|---|---|---|---|---|---|
| Screen limits at mine.....in. | (2) | (3) | (4) | | | |
| No. of samples | 42 | 10 | 13 | 2 | 2 | 1 |
| CHEMICAL PROPERTIES— | | | | | | |
| *As Received Basis*— | | | | | | |
| *Proximate Analysis*— | | | | | | |
| Moisture.....% | 21·5 | 21·5 | 21·5 | 24·5 | 24·5 | 25·5 |
| Ash.....% | 7·7 | 10·4 | 11·1 | 5·9 | 8·6 | 12·1 |
| Volatile matter.....% | 28·8 | 27·5 | 27·4 | 29·5 | 28·2 | 26·4 |
| Fixed carbon.....% | 42·0 | 40·6 | 40·0 | 40·1 | 38·7 | 36·0 |
| Calorific value.....B.t.u./lb. | 8,970 | 8,650 | 8,500 | 8,770 | 8,400 | 8,720 |
| Ash softening temperature.....°F. | 2165 | 2295 | 2305 | | | |
| *Ultimate Analysis*— | | | | | | |
| Carbon.....% | 52·6 | | | | | |
| Hydrogen.....% | 3·4 | | | | | |
| Nitrogen.....% | 1·0 | | | | | |
| Sulphur.....% | 0·4 | 0·4 | | 0·3 | 0·3 | 0·4 |
| Oxygen.....% | 13·4 | | | | | |
| *Capacity Moisture Basis*— | | | | | | |
| *Proximate Analysis*— | | | | | | |
| Capacity moisture.....% | 25·3 | 25·3 | 25·3 | 27·9 | 27·9 | 27·9 |
| Ash.....% | 7·3 | 9·9 | 10·6 | 5·6 | 8·2 | 11·7 |
| Volatile matter.....% | 27·4 | 26·2 | 26·1 | 28·2 | 26·9 | 25·6 |
| Fixed carbon.....% | 40·0 | 38·6 | 38·0 | 38·3 | 37·0 | 34·8 |
| Calorific value.....B.t.u./lb. | 7,540 | 8,230 | 8,085 | 8,380 | 8,020 | 7,560 |
| *Caking Properties*— | | | | | | |
| Volatile matter residue—950°C.... | Non-agglomerate | | | | | |
| Caking index (Gray)..... | 0 | | | | | |
| *Swelling Properties*— | | | | | | |
| Swelling index (A.S.T.M.)..... | 0 | | | | | |
| Swelling index (F.R.L.)..... | Negative | | | | | |
| *Classification by Rank*— | | | | | | |
| A.S.T.M..... | Subbituminous C | | | | | |
| S.V.I..... | 104—Lignitic | | | | | |
| PHYSICAL PROPERTIES— | | | | | | |
| Bulk density.....lb./cu. ft. | 48·6 | 45·2 | 48·9 | | | |
| cu. ft./ton | 41·2 | 44·2 | 40·9 | | | |
| Grindability index..... | | | 37 | | | |

ANALYSES OF ASH—(Districts A & B)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 42·5 | 24·1 | 4·8 | 12·4 | 1·4 | 0·07 | 3·5 | 2·0 | 1·6 | 0·5 | 6·2 |

REMARKS—

(1) See "Coal Mines in Canada"—Publication No. 4–1 Mineral Resources Division, Mines Branch, Ottawa.

(2) Lump: + 4, + 5, + 6 in. or larger, round-hole or bar screen. Stove, Egg: 2 x 4, 5, 6 in. round-hole or bar screen; also $1\frac{1}{4}$ x $2\frac{1}{2}$ in. bar; $2\frac{1}{4}$ x 4 in. bar screen.

(3) Nut: $1\frac{1}{8}$, $1\frac{1}{4}$ sq. x 2, $2\frac{1}{2}$ in. rd.; also $\frac{3}{4}$ x $1\frac{1}{4}$ in. bar and $2\frac{1}{4}$ x 4 in. rd. Pea, Stoker: $\frac{1}{2}$, $\frac{3}{4}$ x $1\frac{1}{8}$, $1\frac{1}{4}$, or $1\frac{1}{2}$ in. sq.; also $\frac{5}{8}$ x $\frac{3}{4}$ in. sq.

(4) Slack varies from 0 x $\frac{1}{2}$ in. rd., sq., or bar screens to 0 x $1\frac{1}{4}$ in.

| ALBERTA<br>**Edmonton** (1)<br><br>EGG LAKE COAL CO. LTD. (2)<br>MINE No. 1582 (3)<br>**EGG LAKE**<br>61,000<br>Morinville—Sec. 36; Tp. 56; R. 26; W. of 5th.<br><br>Upper Seam—Edmonton Formation | | | | | ALBERTA<br>**Edmonton**<br><br>SUNDANCE MINES LTD. (3)<br>No. 129<br>**SUNCOLE**<br>92,000<br>Cardiff—Sec. 24; Tp. 55; R. 25; W. of 4th.<br><br>Edmonton Formation | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lump | Egg | Nut | Stoker | Slack | Lump | Egg | Nut | Stoker | Slack |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 24·5* | 24·5* | 24·5* | 24·5* | 25·5* | 22·0 | 22·0 | 22·0 | 22·0 | 23·0 |
| 4·4 | 7·5 | 9·0 | 9·2 | 12·1 | 5·1 | 7·0 | 7·7 | 7·9 | 15·4 |
| 30·0 | 28·9 | 28·2 | 28·1 | 26·4 | 30·5 | 30·2 | 30·1 | 30·6 | 27·1 |
| 41·1 | 39·1 | 38·3 | 39·2 | 36·0 | 42·4 | 40·8 | 40·2 | 39·5 | 34·5 |
| 9,020 | 8,500 | 8,360 | 8,450 | 7,820 | 9,280 | 9,060 | 8,970 | 8,950 | 7,810 |
| 0·3 | 0·3 | 0·3 | 0·3 | 0·4 | 0·3 | 0·3 | 0·3 | 0·3 | 0·3 |
| 27·9 | 27·9 | 27·9 | 27·9 | 27·9 | 26·0 | 26·0 | 26·0 | 26·0 | 26·0 |
| 4·2 | 7·1 | 8·6 | 7·8 | 11·7 | 4·8 | 6·7 | 7·3 | 7·5 | 14·8 |
| 28·7 | 27·6 | 27·0 | 26·8 | 25·6 | 28·9 | 28·6 | 28·6 | 29·0 | 26·0 |
| 39·2 | 37·4 | 36·5 | 37·5 | 34·8 | 40·3 | 38·7 | 38·1 | 37·5 | 33·2 |
| 8·620 | 8,120 | 7,980 | 8,070 | 7,560 | 8,810 | 8,490 | 8,510 | 8,500 | 7,500 |
| Non-agglomerate<br>0 | | | | | Non-agglomerate<br>0 | | | | |
| 0<br>Negative | | | | | 0<br>Negative | | | | |
| Subbituminous C<br>103—Lignitic | | | | | Subbituminous C<br>104—Lignitic | | | | |

REMARKS—

(1) Outside of District A (Research Council of Alberta, Report No. 35).
(2) Strip mine.
(3) Analyses by Research Council of Alberta.
* Moisture values on "as received" basis adjusted by F.R.L. to conform with other delivered coal of similar type. Capacity moisture almost 3% higher than most samples from Edmonton area tested in past.

| | | |
|---|---|---|
| Province | ALBERTA | |
| Area | **Lethbridge (Districts A & B) (1)** | |
| Operator | GENERAL | |
| Mine | (2) | |
| Trade name | | |
| Output ..... tons/annum | 209,000 | |
| Location of Mine | A:—Tps. 9, 10; R. 21, 22;<br>B:—Tps 8, 9; R. 22; W. of 4th. | |
| Seam and Formation | Galt—Belly River Formation | |
| | *District A* | *District B* |
| Size | Lump, Cobble, Stove | Lump, Cobble, Stove |
| Screen limits at mine ..... in. | | |
| No. of samples | 23 | 33 |
| CHEMICAL PROPERTIES— | | |
| *As Received Basis—* | | |
| *Proximate Analysis—* | | |
| Moisture ..... % | 10·0 | 8·8 |
| Ash ..... % | 11·1 | 10·3 |
| Volatile matter ..... % | 35·3 | 35·1 |
| Fixed carbon ..... % | 43·6 | 45·8 |
| Calorific value ..... B.t.u./lb. | 10,670 | 11,090 |
| Ash softening temperature ..... °F. | | |
| *Ultimate Analysis—* | | |
| Carbon ..... % | 61·3 | 63·4 |
| Hydrogen ..... % | 4·5 | 4·5 |
| Nitrogen ..... % | 1·5 | 1·6 |
| Sulphur ..... % | 0·6 | 0·6 |
| Oxygen ..... % | 11·0 | 10·8 |
| *Capacity Moisture Basis—* | | |
| *Proximate Analysis—* | | |
| Capacity moisture ..... % | 10·7 | 9·5 |
| Ash ..... % | 11·0 | 10·2 |
| Volatile matter ..... % | 35·0 | 34·8 |
| Fixed carbon ..... % | 43·3 | 45·5 |
| Calorific value ..... B.t.u./lb. | 10,590 | 11,000 |
| *Caking Properties—* | | |
| Volatile matter residue—950°C. | Non-agglomerate | |
| Caking index (Gray) | 0 | |
| *Swelling Properties—* | | |
| Swelling index (A.S.T.M.) | 0 | |
| Swelling index (F.R.L.) | Negative | |
| *Classification by Rank—* | | |
| A.S.T.M. | High volatile C bituminous | |
| S.V.I. | 123—Subbituminous | 127—Subbituminous |
| PHYSICAL PROPERTIES— | | |
| Bulk density ..... lb./cu. ft. | | |
| cu. ft./ton | | |
| Grindability index | 38 | 42 |

REMARKS—

(1) Very limited mining in District C (Tp. 7; R. 21). No samples.
(2) *See* "Coal Mines of Canada"—Publication No. 4—1, Mineral Resources Division, Mines Branch, Ottawa.

ALBERTA
**Lethbridge (District B)**
HAMILTON COAL CO., J. J.
FEDERAL—No. 1581
**FEDERAL**
15,000
Near Lethbridge—Sec. 24; Tp. 9; R. 22; W. of 4th.
Galt—Belly River Formation

ALBERTA
**Lethbridge (District B)**
LETHBRIDGE COLLIERIES LTD.*
GALT No. 8—No. 1464
**GALT**
87,000
Lethbridge—Sec. 2; Tp. 9; R. 22; W. of 4th.
Galt—Belly River Formation

| Lump | Stove | Stoker | Slack | Lump, Cobble | Egg, Stove | Nut, Stoker | Slack |
|---|---|---|---|---|---|---|---|
| +4 | 2 x 4 | $\frac{5}{8}$ x 2 | 0 x $\frac{5}{8}$ | +4, 4 x 8 rd. | 2 x 4 rd. | $\frac{5}{8}$ sl. x $1\frac{1}{8}$, 2 rd. | 0 x $\frac{5}{8}$ sl. |
| 3 | 1 | 1 | 1 | 15 | 14 | 7 | 4 |
| 9·0 | 9·0 | 9·0 | 10·0 | 8·5 | 8·5 | 9·0 | 9·0 |
| 8·8 | 11·6 | 15·1 | 15·5 | 9·4 | 11·4 | 11·2 | 14·5 |
| 34·7 | 32·9 | 32·6 | 31·4 | 36·6 | 36·1 | 34·8 | 34·0 |
| 47·5 | 46·5 | 43·3 | 43·1 | 45·5 | 44·0 | 45·0 | 42·5 |
| 11,530 | 10,770 | 10,210 | 10,050 | 11,230 | 10,940 | 10,870 | 10,330 |
| 2305 | 2390 | 2470 | 2450 | 2280 | 2270 | 2305 | 2255 |
| | | | | 64·3 | | | |
| | | | | 4·6 | | | |
| | | | | 1·6 | | | |
| 0·5 | 0·5 | 0·5 | 0·5 | 0·6 | 0·6 | 0·6 | 0·7 |
| | | | | 11·0 | | | |
| 9·6 | 9·6 | 9·6 | 9·6 | 9·4 | 9·4 | 9·4 | 9·4 |
| 8·8 | 11·6 | 15·0 | 15·5 | 9·3 | 11·3 | 11·1 | 14·4 |
| 34·4 | 32·7 | 32·4 | 31·5 | 36·2 | 32·7 | 34·6 | 33·9 |
| 47·2 | 46·1 | 43·0 | 43·4 | 45·1 | 46·6 | 44·9 | 42·3 |
| 11,450 | 10,700 | 10,150 | 10,090 | 11,120 | 10,830 | 10,830 | 10,290 |
| | Non-agglomerate | | | | Non-agglomerate | | |
| | 0 | | | | 0 | | |
| | 0 | | | | 0 | | |
| | Negative | | | | Negative | | |
| | High volatile C bituminous | | | | High volatile C bituminous | | |
| | 125—Subbituminous | | | | 128—Subbituminous | | |
| | 49·0 | 47·3 | 47·5 | 52·0 | 49·3 | 47·4 | 52·5 |
| | 40·8 | 42·3 | 42·1 | 38·5 | 40·6 | 42·2 | 38·1 |
| 40 | 41 | 44 | 46 | 45 | 42 | 43 | 46 |

ANALYSES OF ASH—(Galt)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 39·3 | 19·0 | 11·4 | 16·3 | 2·4 | 0 | 2·1 | 0·2 | 0·2 | 0·4 | 8·6 |

REMARKS—
* Certain sizes dry cleaned.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Lethbridge (District A)** |
| Operator | LETHBRIDGE COLLIERIES LTD. |
| Mine | CADILLAC; STANDARD—No. 1263 |
| Trade name | **CADILLAC** |
| Output.....tons/annum | 50,000 |
| Location of Mine | Shaughnessy—Sec. 30; Tp. 10; R. 21; W. of 4th. |
| Seam and Formation | Galt—Belly River Formation |

| | Lump, Cobble | Egg, Stove | Stoker, Pea | Slack (1) |
|---|---|---|---|---|
| Screen limits at mine.....in. | + 4 rd; 4 x 8 rd. | 2 x 4 rd. | ⅝ x 2 rd. | 0 x 2 rd. |
| No. of samples | 9 | 14 | 8 | 5 |
| CHEMICAL PROPERTIES— | | | | |
| *As Received Basis—* | | | | |
| *Proximate Analysis—* | | | | |
| Moisture.....% | 10·0 | 10·0 | 10·0 | 10·5 |
| Ash.....% | 10·3 | 11·9 | 12·2 | 13·7 |
| Volatile matter.....% | 35·9 | 34·6 | 34·7 | 33·8 |
| Fixed carbon.....% | 43·8 | 43·5 | 43·1 | 42·0 |
| Calorific value.....B.t.u./lb. | 10,770 | 10,560 | 10,420 | 10,070 |
| Ash softening temperature.....°F. | 2330 | 2330 | 2335 | 2320 |
| *Ultimate Analysis—* | | | | |
| Carbon.....% | 61·9 | | | |
| Hydrogen.....% | 4·5 | | | |
| Nitrogen.....% | 1·5 | | | |
| Sulphur.....% | 0·6 | 0·6 | 0·6 | 0·7 |
| Oxygen.....% | 11·2 | | | |
| *Capacity Moisture Basis—* | | | | |
| *Proximate Analysis—* | | | | |
| Capacity moisture.....% | 10·7 | 10·7 | 10·7 | 10·7 |
| Ash.....% | 10·2 | 11·8 | 12·1 | 13·7 |
| Volatile matter.....% | 35·6 | 34·3 | 34·5 | 33·8 |
| Fixed carbon.....% | 43·5 | 43·2 | 42·7 | 41·8 |
| Calorific value.....B.t.u./lb. | 10,690 | 10,480 | 10,340 | 10,050 |
| *Caking Properties—* | | | | |
| Volatile matter residue—950°C..... | | Non-agglomerate | | |
| Caking index (Gray)..... | | 0 | | |
| *Swelling Properties—* | | | | |
| Swelling index (A.S.T.M.)..... | | 0 | | |
| Swelling index (F.R.L.)..... | | Negative | | |
| *Classification by Rank—* | | | | |
| A.S.T.M..... | | High volatile C bituminous | | |
| S.V.I..... | | 123—subbituminous | | |
| PHYSICAL PROPERTIES— | | | | |
| Bulk density.....lb./cu. ft. | 52·0 | 49·3 | 47·0 | 48·0 |
| cu. ft./ton | 38·5 | 40·6 | 42·6 | 41·7 |
| Grindability index | 36 | 40 | 41 | 43 |
| Resistance to Shattering (4 drops)..... | | | | |
| Stability (+ 1½ in.).....% | | | | |
| Fines (− ½ in.).....% | | | | |
| Tumbler Test (Friability) | | | | |
| Stability (+ 1 in.).....% | | | | |
| Abradability (− 10 mesh).....% | | | | |
| Apparent Specific Gravity | | | | |

ANALYSES OF ASH—(Cadillac)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 47·2 | 27·4 | 5·9 | 9·6 | 1·2 | — | 1·8 | 0·9 | 0·1 | 0·7 | 5·4 |

REMARKS—

(1) Also 0 x ¾ in. rd.

| | ALBERTA<br>**Mountain Park (Luscar Basin) (District A)**<br><br>Luscar Coals Ltd. (1)<br>Luscar—No. 905<br>**LUSCAR**<br>265,000<br>Luscar—Sec. 23; Tp. 47; R. 24; W. of 5th.<br>Main—Luscar Formation | | | | | | | ALBERTA<br>**Pekisko (District A)***<br><br>General<br>(4)<br><br>6,000<br>Tp. 22; R. 3; W. of 5th.<br>Belly River Formation |
|---|---|---|---|---|---|---|---|---|
| Mine Run | Lump | Stove, Egg | Nut | Stoker | Slack | Briquettes | | Lump, Stove, Stoker |
| (3) | + ¾ rd. | 2 x 5 | 1¼ x 2 | ⅝ x 1¼ | 0 x 1¼ | | | |
| 12 | 3 | 12 | 1 | 1 | 5 | 7 | | 4 |
| 2·5 | 1·5 | 2·0 | 2·0 | 2·5 | 3·5 | 1·0 | | 4·5 |
| 14·0 | 15·1 | 12·6 | 12·1 | 11·4 | 15·3 | 15·0 | | 9·2 |
| 21·1 | 22·7 | 25·9 | 26·5 | 26·0 | 20·2 | 26·8 | | 38·1 |
| 62·4 | 60·7 | 59·5 | 59·4 | 60·1 | 61·0 | 57·2 | | 48·2 |
| 12,870 | 12,680 | 12,970 | 13,120 | 13,120 | 12,500 | 12,890 | | 12,430 |
| 2550-2750+ | 2320-2750+ | 2210-2750+ | 2540 | 2490 | 2500-2750+ | 2750+ | | 2530 |
| 74·1 | | | | | | | | 70·3 |
| 4·2 | | | | | | | | 4·9 |
| 1·1 | | | | | | | | 1·7 |
| 0·4 | 0·3 | 0·3 | 0·2 | 0·2 | 0·3 | 0·5 | | 0·5 |
| 3·7 | | | | | | | | 8·9 |
| | | | | | | | | 5·3 |
| | | | | | | | | 9·1 |
| | | | | | | | | 37·8 |
| | | | | | | | | 47·8 |
| | | | | | | | | 12,150 |
| | | Fair to Poor<br>20-35 | | | | | | Poor |
| 1·5 | 1·5 | | 3·0 | | | | | |
| | | Negative | | | | | | |
| | | Medium volatile bituminous<br><br>185—Orthobituminous | | | | | | High volatile B bituminous<br>140—Subbituminous (agglomerating) |
| 61·5 | | | | | | 44·0 | | |
| 32·5 | | | | | | 45·5 | | |
| 88 | | | | | 93 | | | |
| | | | | | | R. | C. (2) | |
| | | | | | | 62·7 | 82·3 | |
| | | | | | | 20·3 | 8·2 | |
| | | | | | | 78·8 | 91·1 | |
| | | | | | | 19·8 | 8·8 | |
| | | | | | | 1·19 | 1·21 | |

Analyses of Ash—(Luscar)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 54·0 | 24·5 | 5·5 | 7·8 | 1·5 | — | 0·9 | 0·8 | 0·3 | 0·9 | 3·6 |

Remarks—

(1) Mainly a strip operation. Preparation plant includes wet and dry cleaning equipment. Also operate a briquetting plant for production of domestic and railway briquettes. A Parry dryer is employed to dry the fines used for briquetting.
(2) R—Railway briquettes; C—Commercial briquettes.
(3) This includes an average of 12 samples for 1938 and 12 samples for 1939 obtained from CNR, in addition to our own samples.
(4) Only one operator in 1955—Ideal Coal Ltd., mine No. 1516.
*District B—Tps. 18-20; R. 2; W. of 5th. Typical analysis according to Research Council of Alberta, Report No. 35 (1944): Capacity moisture:—8·0%; Ash—9·2%; Volatile matter—36·1%; Fixed Carbon—46·7%; Sulphur—0·6%; Calorific value—12,060 Btu/lb.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Pekisko (District A)** |
| Operator | IDEAL COAL LTD. |
| Mine | No. 1516 |
| Trade name | **IDEAL** |
| Output.....tons/annum | 6,000 |
| Location of Mine | Priddis—Sec. 4; Tp. 22; R. 3; W. of 5th. |
| Seam and Formation | Belly River Formation |

| Size | Lump | Stove | Stoker | Slack |
|---|---|---|---|---|
| Screen limits at mine.....in. | + 4 | 1¼ x 4 | ¼ x 1¼ | 0 x ¼ |
| No. of samples | 2 | 1 | 1 | 1 |
| CHEMICAL PROPERTIES— | | | | |
| *As Received Basis—* | | | | |
| *Proximate Analysis—* | | | | |
| Moisture.....% | 4·5 | 4·5 | 4·5 | 6·5 |
| Ash.....% | 9·1 | 10·4 | 8·1 | 10·5 |
| Volatile matter.....% | 37·8 | 37·9 | 38·7 | 37·2 |
| Fixed carbon.....% | 48·6 | 47·2 | 48·7 | 45·8 |
| Calorific value.....B.t.u./lb. | 12,440 | 12,240 | 12,620 | 11,790 |
| Ash softening temperature.....°F. | 2600 | 2510 | 2470 | 2450 |
| *Ultimate Analysis—* | | | | |
| Carbon.....% | (1) 70·4 | | | |
| Hydrogen.....% | 4·9 | | | |
| Nitrogen.....% | 1·7 | | | |
| Sulphur.....% | 0·5 | 0·5 | 0·5 | 0·4 |
| Oxygen.....% | 8·9 | | | |
| *Capacity Moisture Basis—* | | | | |
| *Proximate Analysis—* | | | | |
| Capacity moisture.....% | 5·3 | 5·3 | 5·3 | 5·3 |
| Ash.....% | 9·0 | 10·3 | 8·0 | 10·6 |
| Volatile matter.....% | 37·5 | 37·6 | 38·4 | 37·7 |
| Fixed carbon.....% | 48·2 | 46·8 | 48·3 | 46·4 |
| Calorific value.....B.t.u./lb. | 12,340 | 11,590 | 12,510 | 11,950 |
| *Caking Properties—* | | | | |
| Volatile matter residue—950°C..... | Poor | Poor | Poor | Poor |
| Caking index (Gray)..... | | | | |
| *Swelling Properties—* | | | | |
| Swelling index (A.S.T.M.)..... | | | | |
| Swelling index (F.R.L.)..... | | | | |
| *Classification by Bank—* | | | | |
| A.S.T.M..... | High volatile B bituminous | | | |
| S.V.I..... | 140—Subbituminous (agglomerating) | | | |
| PHYSICAL PROPERTIES— | | | | |
| Bulk density.....lb./cu. ft. | 47·8 | 50·3 | 44·8 | 49·5 |
| cu. ft./ton | 41·8 | 39·8 | 44·6 | 40·4 |
| Grindability index..... | 46 | 47 | 48 | 49 |

REMARKS—

(1) Calculated from other analyses of the area.

ALBERTA
**Pembina (Districts A, B, & C)**
GENERAL
(1)

251,000
Wabamun and Evansburg
Edmonton Formation

EVANSBURG
Tps. 53, 54; R. 6-8; W. of 5th.
(District A)

WABAMUN
Tps. 49-53; R. 3, 4; W. of 5th.
(Districts B and C)

ALBERTA
**Pembina (Wabamun District) (District B)**
ALBERTA SOUTHERN COAL CO. LTD.
VICTORY—No. 419 (2)
**VICTORY**
234,000
Wabamun—Sec. 15; Tp. 53; R. 4; W. of 5th.
Upper or Big—Edmonton Formation

| Mine Run | Mine Run, Lump, Egg | Mine Run | Lump (3) | Egg | Nut | Stoker | Slack |
|---|---|---|---|---|---|---|---|
| | | | + 4 rd. | 2 x 4 rd. | 1¼ x 2 | ⅞ x 1 | 0 x ⅞ |
| 9 | 13 | 2 | 9 | 1 | 1 | 5 | 2 |
| 18·3 | 20·5 | 20·5 | 20·5 | 20·5 | 20·5 | 19·5 | 14·0 |
| 8·6 | 8·0 | 7·9 | 8·1 | 8·1 | 7·9 | 9·4 | 10·5 |
| 28·9 | 28·8 | 28·1 | 28·2 | 29·3 | 29·7 | 28·8 | 29·3 |
| 44·2 | 42·7 | 43·5 | 43·2 | 42·1 | 41·9 | 42·3 | 46·2 |
| 9,080 | 8,930 | 9,000 | 8,930 | 8,990 | 8,900* | 8,880 | 9,540 |
| 2080 | 2415 | 2395 | 2415 | 2500 | 2350 | 2420 | 2375 |
| 56·7 | 53·6 | 53·7 | | | | | |
| 3·2 | 3·2 | 3·2 | | | | | |
| 0·8 | 0·7 | 0·7 | | | | | |
| 0·2 | 0·2 | 0·2 | 0·2 | 0·2 | 0·2 | 0·2 | 0·3 |
| 12·2 | 13·8 | 13·8 | | | | | |
| 19·0 | 19·9 | 19·9 | 19·9 | 19·9 | 19·9 | 19·9 | 19·9 |
| 8·5 | 8·1 | 7·9 | 8·2 | 8·2 | 7·9 | 9·4 | 9·8 |
| 28·7 | 29·0 | 28·4 | 28·4 | 29·6 | 29·9 | 28·7 | 27·3 |
| 43·8 | 43·0 | 43·8 | 43·5 | 42·3 | 42·3 | 42·0 | 43·0 |
| 9,000 | 9,000 | 9,070 | 8,990 | 9,060 | 8,970* | 8,830 | 8,880 |
| Non-agglomerate<br>0 | | Non-agglomerate<br>0 | | | | | |
| 0<br>Negative | | 0<br>Negative | | | | | |
| 92 Subbituminous B<br>Brown Lignite | 96 | Subbituminous B<br>96—Brown Lignite | | | | | |
| | | | 48·3 | 51·3 | 43·8 | 44·3 | 46·9 |
| | | | 41·4 | 39·0 | 45·7 | 45·3 | 42·6 |
| | 45 | 43 | 49 | 44 | 41 | 45 | 45 |

REMARKS—

(1) Operators listed in 1955—
Evansburg District (District A):
Pembina Peerless Coal—mine No. 1739—strip (Formerly Pembina Peerless Coal Co. Ltd.—mine No. 1495).
Rhodes, H. A. & Son—mine No. 1657—strip.
Wabamun District (Districts B & C)—
Alberta Southern Coal Co. Ltd.—mine No. 419—strip.
Fodor, Frank, and Fodor, Wm.—mine No. 1712—strip.
Mt. Royal Collieries Ltd.—mine No. 1592—strip (no production since 1953).
Strawberry Creek Coal Co.—mine No. 1644—strip.
Warburg Coal Co. Ltd.—mine No. 1670—strip.
(2) Closed in 1951 but listed again in 1953 operating as a strip mine.
(3) Also plus 7 in. rd.
*Calculated from the average (dry mineral-matter-free) calorific value of all the samples.

| | |
|---|---|
| Province | ALBERTA |
| Area | **Sheerness** |
| Operator | GENERAL (1) |
| Mine | |
| Trade name | |
| Output.....tons/annum | 100,000 |
| Location of Mine | Tp. 29; R. 12, 13; W. of 4th. |
| Seam and Formation | No. 1—Edmonton Formation (2) |
| Size | Lump, Cobble, Egg, Nut, Stoker |
| Screen limits at mine.....in. | |
| No. of samples | 15 |
| CHEMICAL PROPERTIES— | |
| *As Received Basis—* | |
| *Proximate Analysis—* | |
| Moisture.....% | 25·0 |
| Ash.....% | 6·5 |
| Volatile matter.....% | 30·0 |
| Fixed carbon.....% | 38·5 |
| Calorific value.....B.t.u./lb. | 8,490 |
| Ash softening temperature.....°F. | 2155 |
| *Ultimate Analysis—* | |
| Carbon.....% | |
| Hydrogen.....% | |
| Nitrogen.....% | |
| Sulphur.....% | 0·4 |
| Oxygen.....% | |
| *Capacity Moisture Basis—* | |
| *Proximate Analysis—* | |
| Capacity moisture.....% | 25·8 |
| Ash.....% | 6·5 |
| Volatile matter.....% | 29·7 |
| Fixed carbon.....% | 38·0 |
| Calorific value.....B.t.u./lb. | 8,400 |
| *Caking Properties—* | |
| Volatile matter residue—950°C | Non-agglomerate |
| Caking index (Gray) | 0 |
| *Swelling Properties—* | |
| Swelling index (A.S.T.M.) | 0 |
| Swelling index (F.R.L.) | Negative |
| *Classification by Rank—* | |
| A.S.T.M | Subbituminous C |
| S.V.I | 100—Lignitic |
| PHYSICAL PROPERTIES— | |
| Bulk density.....lb./cu. ft.<br>cu. ft./ton | |
| Grindability index | |

REMARKS—

(1) Operation only in District E.
(2) The seams correspond to those in Drumheller area.

ALBERTA
**Sheerness (District E)**

WESTERN DOMINION COAL MINES LTD.
ROSELYN—No. 443 (1)
**ROSELYN**
88,000
Sheerness—Sec. 13; Tp. 29; R. 13; W. of 4th.
No. 1—Edmonton Formation

| Lump | Cobble, Egg | Nut | Stoker | Slack |
|---|---|---|---|---|
| + 6, + 7 rd. | 2 x 6, 7 rd., 2 x 4 | $1\frac{1}{8}$ x 2 | $\frac{7}{16}$ x $1\frac{1}{8}$ | 0 x $\frac{7}{16}$ |
| 4 | 4 | 3 | 4 | 2 |
| 25·0 | 25·0 | 25·0 | 25·0 | 25·0 |
| 6·0 | 6·7 | 6·8 | 6·7 | 7·5 |
| 30·1 | 29·6 | 30·2 | 30·2 | 29·3 |
| 38·9 | 38·7 | 38·0 | 38·1 | 38·2 |
| 8,640 | 8,510 | 8,430 | 8,380 | 8,340 |
| 2140 | 2205 | 2185 | 2090 | 2055 |
| 52·8 | | | | |
| 3·5 | | | | |
| 1·2 | | | | |
| 0·4 | 0·4 | 0·4 | 0·5 | 0·6 |
| 11·1 | | | | |
| 25·8 | 25·8 | 25·8 | 25·8 | 25·8 |
| 5·9 | 6·7 | 6·7 | 6·7 | 7·4 |
| 29·8 | 29·3 | 29·8 | 29·9 | 28·9 |
| 38·5 | 38·2 | 37·7 | 37·6 | 37·9 |
| 8,540 | 8,420 | 8,340 | 8,290 | 8,250 |

Non-agglomerate
0

0
Negative

Subbituminous C
100—Lignitic

| | | | |
|---|---|---|---|
| 48·3 | 46·0 | | 52·0 |
| 41·4 | 43·5 | | 38·4 |

REMARKS—
(1) Formerly operated by Chinook Coal Co. Ltd.—coal trade named "Sheerness-Chinook".

| | |
|---|---|
| Province | BRITISH COLUMBIA |
| Area | **Peace River** |
| Operator | GETHING, KING |
| Mine | GETHING |
| Trade name | |
| Output.....tons/annum | 2,000 |
| Location of Mine | 12 mi. W. of Hudson Hope |
| Seam and Formation | Lower Cretaceous |
| Size | Stoker |
| Screen limits at mine.....in. | ¼ x 1½ |
| No. of samples | 2 |
| CHEMICAL PROPERTIES— | |
| *As Received Basis*— | |
| *Proximate Analysis*— | |
| Moisture.....% | 7·5 |
| Ash.....% | 13·2 |
| Volatile matter.....% | 19·8 |
| Fixed carbon.....% | 59·5 |
| Calorific value.....B.t.u./lb. | 11,545 |
| Ash softening temperature.....°F. | |
| *Ultimate Analysis*— | |
| Carbon.....% | |
| Hydrogen.....% | |
| Nitrogen.....% | |
| Sulphur.....% | 0·4 |
| Oxygen.....% | |
| *Caking Properties*— | |
| Volatile matter residue—950°C | Non-agglomerate |
| Caking index (Gray) | 0 |
| *Swelling Properties*— | |
| Swelling index (A.S.T.M.) | 0 |
| Swelling index (F.R.L.) | Negative |
| *Classification by Rank*— | |
| A.S.T.M. | Medium volatile bituminous |
| S.V.I. | 157—Border of Parabituminous (1) |
| PHYSICAL PROPERTIES— | |
| Bulk density.....lb./cu. ft.<br>cu. ft./ton | |
| Grindability index | |

REMARKS—

(1) Rank apparently depressed, probably due to oxidation *in situ*.

BRITISH COLUMBIA (SOUTH EAST)
**East Kootenay (Crowsnest)**
THE CROW'S NEST PASS COAL CO. LTD. (1)
MICHEL COLLIERY (2)
**MICHEL**
(4)
Michel Creek—21 mi. N.E. of Fernie
A East, B East, B South, A West and South and a Strip Mine
Kootenay Formation, Lower Cretaceous.

| Mine Run | Lump | Cobble | Stoker | Slack | Fines | Slack (3) |
|---|---|---|---|---|---|---|
| | + 7 lip | $1\frac{5}{8}$ sq. x 7 lip | $\frac{3}{16}$ x $1\frac{5}{8}$ sq. | 0 x $1\frac{5}{8}$ sq. | 0 x $\frac{3}{16}$ sq. | 0 x $1\frac{5}{8}$ |
| 28 | 8 | 3 | 16 | 64 | 7 | 1 |
| 1·5 | 1·0 | 1·0 | 1·5 | 2·5 | 3·0 | 2·5 |
| 7·4 | 9·6 | 9·0 | 6·7 | 8·8 | 10·4 | 13·3 |
| 24·8 | 24·1 | 23·2 | 24·8 | 24·1 | 22·2 | 22·8 |
| 66·3 | 65·3 | 66·8 | 67·0 | 64·6 | 64·4 | 61·4 |
| 14,100 | 13,800 | 13,840 | 14,140 | 13,790 | 13,290 | 12,835 |
| 2480* | 2605* | 2570* | 2560* | 2670* | 2750+* | 2750+* |
| 80·0 | | | | | | |
| 4·8 | | | | | | |
| 1·4 | | | | | | |
| 0·6 | 0·6 | 0·5 | 0·6 | 0·7 | 0·6 | 0·5 |
| 4·3 | | | | | | |
| | | | | | | Poor |
| | | | Good | | | |
| | | | 45–60 | | | |
| | | | 7·5–9 | | | |
| | | | Medium volatile bituminous | | | |
| | | | 185—Orthobituminous | | | |
| 57·0 | 51·5 | 53·5 | 50·0 | 54·3 | 50·3 | 56·0 |
| 35·1 | 38·8 | 37·4 | 40·0 | 36·8 | 39·8 | 35·7 |
| | | | 95–125 | | | |

ANALYSES OF ASH—(Michel)

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 49·3 | 27·8 | 11·7 | 3·1 | 1·5 | 0·06 | Nil | 1·3 | 0·4 | 1·2 | 3·5 |

REMARKS—
(1) Domestic and industrial coke produced in Curran-Knowles ovens.
(2) The preparation plant is equipped with wet washing jigs and air cleaning equipment.
(3) This analysis indicates the influence that admixture of the non-uniform partially oxidized strip coal has on the final mixed product.
(4) About 30% of the output was strip mined coal.
* Ash softening temperatures varied between 2080°F and 2750 + °F.

| | |
|---|---|
| Province | BRITISH COLUMBIA (VANCOUVER ISLAND) |
| Area | **Comox** |
| Operator | Canadian Collieries (Dunsmuir) Ltd. |
| Mine | T'Sable River (1) (2) |
| Trade name | **COMOX** |
| Output.....tons/annum | 201,000 |
| Location of Mine | T'Sable River |
| Formation | Upper Cretaceous |

| Size | Mine Run | Lump, Egg, Cobble | Nut, Pea, Stoker, Washed Smalls | Slack | Fines |
|---|---|---|---|---|---|
| Screen limits at mine.....in. | | (3) | (4) | 0 x $\frac{7}{8}$ rd. | 0 x $\frac{3}{16}$ rd. |
| No. of samples | 15 | 38 | 33 | 11 | 3 |
| Chemical Properties— | | | | | |
| *As Received Basis—* | | | | | |
| *Proximate Analysis—* | | | | | |
| Moisture.....% | 3·5 | 2·5 | 3·0 | 5·5 | 6·0 |
| Ash.....% | 12·6 | 11·6 | 14·1 | 14·2 | 15·6 |
| Volatile matter.....% | 31·0 | 32·2 | 30·7 | 30·4 | 30·2 |
| Fixed carbon.....% | 51·9 | 53·7 | 52·2 | 49·9 | 48·2 |
| Calorific value.....B.t.u./lb. | 12,610 | 12,970 | 12,470 | 12,120 | 11,890 |
| Ash softening temperature.....°F. | 2270 | 2115 | 2325 | 2250 | 2260 |
| *Ultimate Analysis—* | | | | | |
| Carbon.....% | 71·1 | | | | |
| Hydrogen.....% | 4·6 | | | | |
| Nitrogen.....% | 1·0 | | | | |
| Sulphur.....% | 1·8 | 2·0 | 2·1 | 2·5 | 2·8 |
| Oxygen.....% | 5·4 | | | | |
| *Caking Properties—* | | | | | |
| Volatile matter residue—950°C | | | Fair to Good | | |
| Caking index (Gray) | | | 65 | | |
| *Swelling Properties—* | | | | | |
| Swelling index (A.S.T.M.) | | | 6–8 | | |
| Swelling index (F.R.L.) | | | 833 | | |
| *Classification by Rank—* | | | | | |
| A.S.T.M | | | High volatile A bituminous | | |
| S.V.I | | | 175—Border of Para and Orthobituminous | | |
| Physical Properties— | | | | | |
| Bulk density.....lb./cu. ft. | | 50·7 | 50·5 | 52·0 | |
| cu. ft./ton | | 39·5 | 39·6 | 38·5 | |
| Grindability index | | | 76 | 67 | 69 |

Analyses of Ash—

| | $SiO_2$ | $Al_2O_3$ | $Fe_2O_3$ | CaO | MgO | MnO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $TiO_2$ | $SO_3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| %..... | 27·5 | 17·8 | 16·9 | 15·7 | 2·4 | 0·02 | 0·6 | 0·6 | 0·4 | 0·4 | 17·4 |

Remarks—

(1) Comox No. 5 and No. 8 not in operation since 1947 and 1953 respectively.
(2) Wet washing plant at Union Bay.
(3) Lump: + 6 in.; Cobble or Egg: 3 x 6 in. rd. (rescreened on $\frac{7}{8}$ in. sq. mesh screen for distribution in Vancouver).
(4) No. 1 Nut: $1\frac{1}{4}$ x 3 in. rd.; No. 2 Nut: $\frac{7}{8}$ in. x $1\frac{1}{4}$ in. rd.; Pea: $\frac{3}{16}$ x $\frac{7}{8}$ in. rd.; Washed smalls: 0 x $\frac{3}{16}$ in.

# APPENDIX

*List of Changes in Names and Status of Operations of Mine Operators*

| | |
|---|---|
| Amalgamated Coals Ltd., Mine No. 1573 | Formerly The Monarch Coal Mining Co. Ltd. |
| Beverly Coal Co. Ltd., Mine No. 1627 (strip) | Not listed since 1954 |
| Black Nugget Coal Co. Ltd., The—Mine No. 1107 | Tipple destroyed by fire in the Spring, 1955 |
| Brazeau Collieries Ltd., Mine No. 256 | Mine suspended operation in 1954 |
| Bryan Mountain Coal Co. Ltd., Mine No. 1157 | No production since September 1954 |
| Canadian Collieries (Dunsmuir) Ltd., Foothills Mine No. 711 | Formerly Foothills Collieries Ltd. |
| Canadian Collieries (Dunsmuir) Ltd., Nanaimo Area | Not listed in 1955 |
| Carroll, A. H. and Associates, Cassidy No. 7 Mine | Formerly Ross and Carroll; no production in 1954 |
| Chappell Brothers, Mine No. 215 | Formerly Dodd's Coal Mine |
| Drummond Coal Ltd., Drummond Nos. 1 and 2 Mines | Formerly Intercolonial Coal Co. Ltd. |
| Easton, James, Mine No. 1417 | Not listed in 1955 |
| Eldorado Mining & Refining Co. Ltd | Not listed in 1955 |
| Gibney, F., Mine No. 651 | Formerly Baldwin Collieries |
| Inland Coal Co. Ltd., Mine No. 384 | Not listed in 1955 |
| King, G. H. (Charles McKenelly, Operator) Lease No. 179 | Formerly listed as King, G. H., strip pit |
| McMann, Hugh H. (Victor McManu, Operator) Lease No. 176 | Formerly McMann, H. H.–MacDonald, J. F. |
| Minute Coal Co. Ltd | Not listed in 1955 |
| Mitchell, Parker D. (Mrs. W. M. Wasson, Operator) Lease No. 405 | Formerly Wasson W. M. & Mitchell, P .D., Lease Nos. 402-411 |
| Pembina Peerless Coal, Mine No. 436 | Formerly Pembina Peerless Coal Co. Ltd., Mine No. 1495 |
| Proskow, Joseph | Not listed in 1955 |
| Star Coal Mine, Ltd., Mine No. 436 | Formerly Rosedale Collieries Ltd. Mine Nos. 346 and 436 |
| Sterling–Coal Valley Mining Co. Ltd., Coal Valley Mine No. 1002 | No production from Mine No. 769 (Sterling) since 1952 |
| Thurrot, H. P. (E. S. Crawford & Son, Operator) | Formerly Crawford, E. S. & Son |
| Welton, Mrs. Gertrude M. (Alfred Parker, Operator) Lease No. 181 | Formerly Welton Ltd., Harvey |
| Wheatley & Sons, Frank Mine No. 1244 | Not listed in 1955 |

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Note: *Bold face figures indicate page numbers in this Supplement; other numbers refer to page numbers in the Second Edition "Analysis Directory of Canadian Coals", Mines Branch Publication No. 836.*

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*Trade names of coals.