CANADA

ANALYSIS DIRECTORY OF CANADIAN COALS

Second Edition - 1953

By

E. SWARTZMAN

DEPARTMENT OF MINES
AND TECHNICAL SURVEYS
MINES BRANCH
FUELS DIVISION

No. 836

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FOREWORD

Because coals *in situ* are not usually a uniform product, and since changes in methods of mining and preparation result in variations in the commercial products, it has been considered advisable to revise the *Analysis Directory of Canadian Coals* periodically in order to present up to date information.

The present publication is a revision of the 1948 edition published as Memorandum Series No. 100, and includes all analyses available in the records of the Fuels Division to the end of December, 1952, and certain special samples obtained in 1953.

Where, in the case of certain limited producing areas in Alberta, analyses data were meagre or not available in our records, use was made of the typical analyses published by Prof. E. Stansfield and his associates in Research Council of Alberta Reports Nos. 14 and 35.

Information as to coal mining properties, location of mines, etc., additional to that shown for the coals reported in this Directory, may be found in the Mines Branch, publication No. 4–1, *Coal Mines in Canada*, published annually by the Mineral Resources Division. For accurate annual production figures of individual mines, areas and provinces, the publications of the Dominion Bureau of Statistics entitled "The Coal Mining Industry" should be consulted.

It should be noted, that for the lower rank (high volatile C bituminous and subbituminous) coals from Alberta, the moisture content on the "capacity-moisture" basis is shown in addition to that reported in the ordinary proximate analyses. The B.t.u./lb. values on this basis representing the heating value of the coals as mined, has also been included to enable a more uniform comparison than otherwise feasible for the "cost per million B.t.u." values. The adoption of the capacity-moisture values for such evaluation and for classification purposes has been made in agreement with the practice of the laboratory of the Research Council of Alberta.

In many parts of Canada, especially in Ontario and Quebec, United States and British anthracites are extensively used, and it is often with such fuels that Canadian coals must compete, especially in the field of domestic consumption. In view of this, average and typical analyses of the competitive anthracites are given in Appendix I. The analyses of the American anthracites have been taken or calculated from data published by the U.S. Bureau of Mines. The analyses of British anthracites are average values based upon data available in the records of the Fuels Division.

Another feature in this edition is Appendix II which presents, on the dry basis, the maximum and minimum ash values for each coal, in accordance with size. This information coupled with the average ash value, and with reference to the number of samples considered, indicates the uniformity or deviation from the average that might be expected in each case. This

appendix also presents the calorific value of each coal on the pure coal (i.e. dry and mineral-matter-free) basis, a value considered to be characteristic of each coal. From this data the calorific value of any coal may be calculated in accordance with any given or determined ash and moisture, as shown in the succeeding discussion in the Introduction.

Acknowledgement is due Messrs. T. E. Tibbetts, D. C. Walsh and A. J. Reynolds who aided Mr. E. Swartzman in the large amount of calculations and clerical work involved.

R. E. GILMORE,
Chief, Fuels Division.

OTTAWA, Ontario.
June, 1953.

INTRODUCTION

Arrangement of Coals

The analyses of the coals in this *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 the *Analysis Directory of Canadian Coals* were, with some exceptions, those to be found in the records of the Fuels Division.* The various analyses calculated to the dry basis were carefully selected, tabulated, weighted and averaged. The moisture content for 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. In addition to the proximate analyses, calorific value and ash softening temperature, the ultimate analyses is given for most coals.

Although the analyses, as a whole, are presented on the basis of what is considered to be a reasonable delivered moisture content for all the lower rank, higher moisture coals from the high volatile C bituminous to lignites, the "capacity moisture" content and the calorific value corresponding to this moisture content is also presented. "Capacity moisture" is considered to be the true or inherent moisture content of a coal, and has been defined as the least moisture remaining in the coal at a relative humidity of 100 per cent. The capacity moisture data used for Alberta coals are averages of the values for each coal available in the Fuels Division records, and those published by Stansfield and Lang in Research Council of Alberta Report No. 35[1]. The values used for all coals outside of Alberta were those available in the Fuels Division records. This data has been included to enable certain 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 basis which may yield a variable moisture value.

Insofar as physical characteristics are concerned, the present compilation contains, whenever sufficient data has been available, the bulk density (weight per cubic foot, and volume per ton) of the various sizes, the grindability indices (Hardgrove-Machine method), and the resistance to handling in the case of briquettes. In addition, such physico-chemical properties concerned with caking characteristics, as the "swelling index" (Fuel Research Laboratories and A.S.T.M. methods), and the "caking index", (Gray method) are included. Wherever available, the composition of the ash is also given.

(1) Stansfield, E. & Lang, W.A.: "Coals of Alberta, Their Occurrence, Analysis and Utilization", Research Council of Alberta, Report No. 35—1944.

* Supplementary analyses will be published periodically when analyses of subsequent samples indicate a revision is warranted, or when new operations are opened.

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. With the aid of the coke classification chart, shown in Chart 1, this data may be used to predict the physical properties of the coke which may be made from any given coal under standard by-product conditions. 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 sized briquette over $1\frac{1}{2}$ inches, the resulting shattered and abraded product is then screened over 1-inch square holed 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 is available for railway-type briquettes, those on the market so far have a stability index of about 80 per cent.

(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"—Canadian Mines Branch Publication 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 holed 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.

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

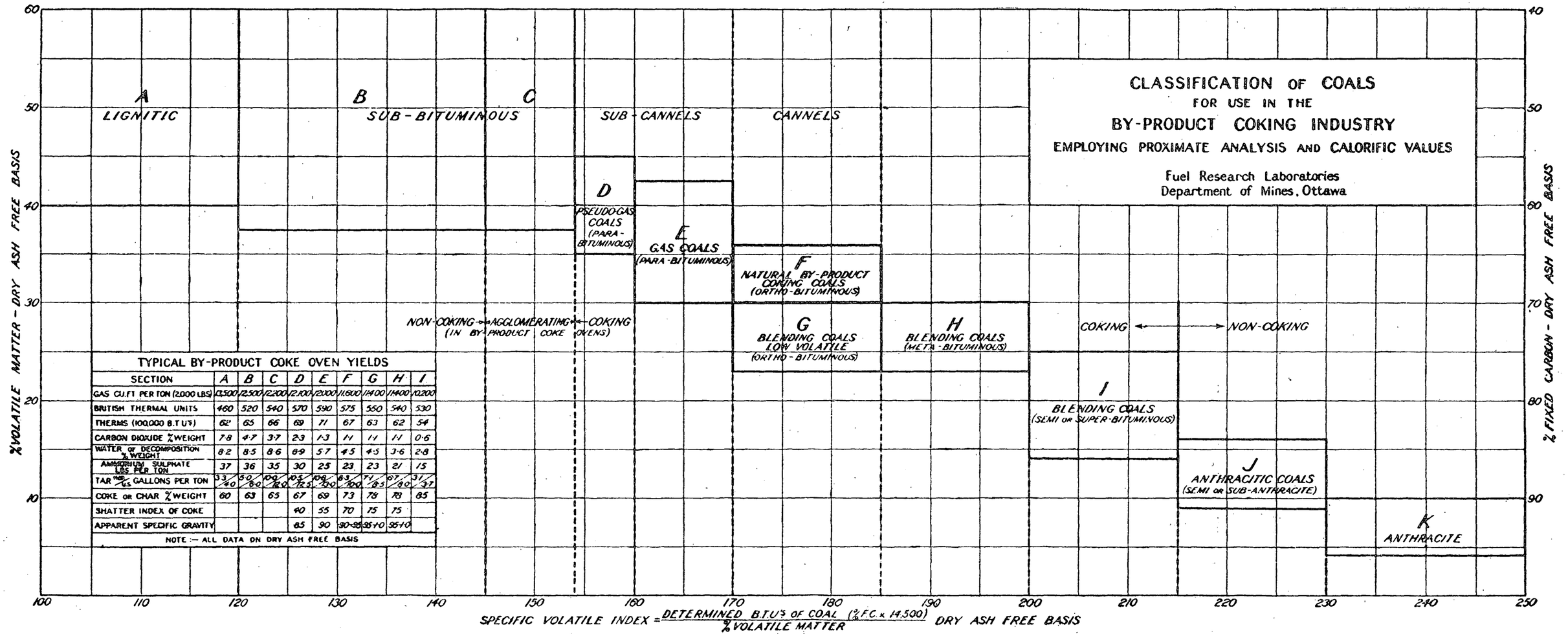
CLASSIFICATION OF COALS BY RANK

(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.



TYPICAL BY-PRODUCT COKE OVEN YIELDS

SECTION	A	B	C	D	E	F	G	H	I
GAS CU.FT PER TON (2,000 LBS)	13,500	12,500	12,200	12,100	12,000	11,800	11,400	11,400	10,200
BRITISH THERMAL UNITS	460	520	540	570	590	575	550	540	530
THERMS (100,000 B.T.U'S)	62	65	66	69	71	67	63	62	54
CARBON DIOXIDE % WEIGHT	7·8	4·7	3·7	2·3	1·3	1·1	1·1	1·1	0·6
WATER OF DECOMPOSITION % WEIGHT	8·2	8·5	8·6	8·9	5·7	4·5	4·5	3·6	2·8
AMMONIUM SULPHATE LBS PER TON	37	36	35	30	25	23	23	21	15
TAR AND/OR GALLONS PER TON	33 / 40	50 / 60	100 / 120	105 / 125	109 / 130	83 / 100	71 / 85	67 / 80	31 / 37
COKE OR CHAR % WEIGHT	60	63	65	67	69	73	78	78	85
SHATTER INDEX OF COKE				40	55	70	75	75	
APPARENT SPECIFIC GRAVITY				85	90	90-95	95-1·0	95-1·0	

NOTE :— ALL DATA ON DRY ASH FREE BASIS

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

By noting the position of a coal on a chart, (such as that presented as Chart 2), according to its S.V.I. and volatile matter, it is possible to predict with a fair degree of accuracy the characteristics of the coal with respect to its behavior in a by-product coke oven and the approximate yield of by-products that may be expected. These characteristics are indicated in the table inserted in Chart 2, in which, it is to be noted, the data are presented on the dry ash-free basis.

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

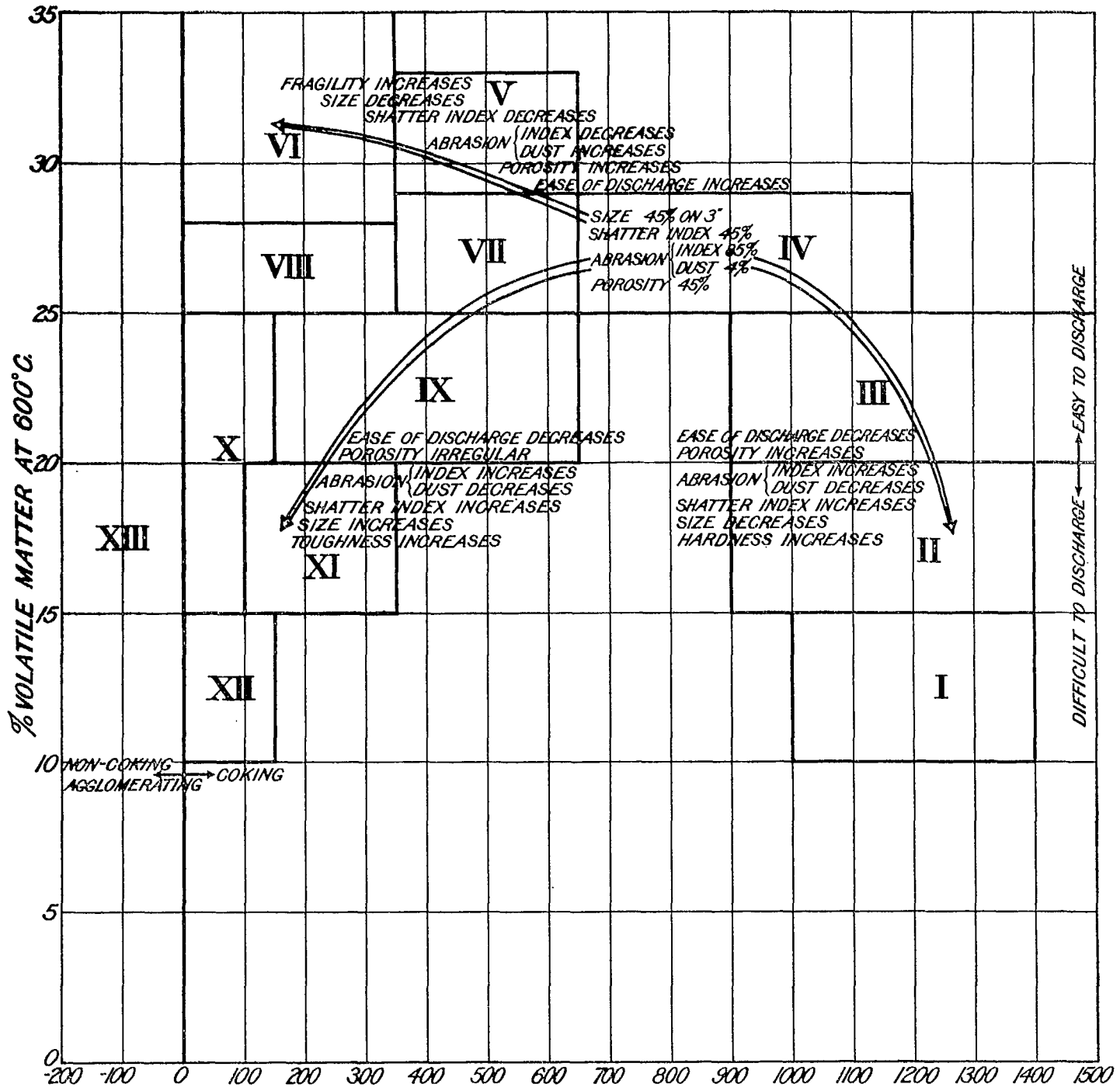
Customary Trade Designation	Size (1) Designation Round-hole Screen (inches)	Permissible Size (3) Limits, Round-hole Screen (inches)		Remarks
		Passing (2)	Retained on (2)	
Mine Run	As mined	Variable	$\frac{1}{8}$ ($\frac{1}{16}$)	Purchaser may specify maximum permissible size, in which case not more 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).



SECTION	ASH %	SIZE ON WHARF % ON 3"	SIZE ON WHARF SPEEZE	SHATTER INDEX	SHATTER SPEEZE	ABRASION INDEX	ABRASION DUST	DENSITY APP. S.G.	DENSITY LB. C.F.	TRANSVERSE SHRINKAGE	APPEARANCE OF NATURAL SURFACE	SHAPE	STRENGTH	CROSS FRACTURE	LONGITUDINAL FRACTURE	CELL STRUCTURE	SPONGE	PEBBLY SEAM
I		POCAHONTAS TYPE BLENDING COALS								NIL			HARD				VERY LITTLE	NONE
II		25-40	2·5-1·0	65-55	3·0-2·0	85-95	3·5 2·0	85-95	24-26	FAIR*	STEEL GREY AND SMOOTH	SQUARE	HARD	MEDIUM TO LARGE AMOUNT STRAIGHT	SMALL TO MEDIUM AMOUNT	DENSE	VERY LITTLE	NONE
III		30-45	2·5-1·0	50-65	3·0-2·0	85-95	3·5-2·0	·90-1·0	25-28	FAIR TO GOOD	STEEL GREY AND SMOOTH	SQUARE	HARD	MEDIUM AMOUNT, SQUARE	SMALL TO MEDIUM AMOUNT	DENSE	VERY LITTLE	NONE
IV		40-50	3·0-2·0	45-55	3·0-2·0	80-90	5·0-3·0	1·0-1·1	26-29	GOOD	STEEL GREY, FAIRLY SMOOTH	SLIGHTLY TRIANGULAR	HARD	MEDIUM AMOUNT, STEPPY	MEDIUM AMOUNT	DENSE	VERY LITTLE	NONE
V		30-50	4·0-2·0	40-50	6·0 4·0	75-85	5·0-3·0	1·0-0·9	26-29	GOOD	STEEL GREY, IRREGULAR	TRIANGULAR FINGERY	FRAGILE	MEDIUM TO LARGE AMOUNT STEPPY	MEDIUM TO LARGE AMOUNT	MEDIUM	SMALL TO MEDIUM AMOUNT	NONE
VI		30-50	2·0-5·0	25-40	6·0-4·0	55-80	7·0-3·0	85-0·9	25	VERY GOOD	STEEL GREY, IRREGULAR	TRIANGULAR VERY FINGERY	VERY FRAGILE	MEDIUM TO LARGE AMOUNT STEPPY	LARGE AMOUNT	MEDIUM TO LARGE	MEDIUM AMOUNT	NONE
VII	0·5	40-50	4·0	55-70	3·0	80-95	2·5-5·0	·83	23·5	GOOD	STEEL GREY, IRREGULAR	BLOCKY; SLIGHTLY TRIANGULAR	HARD TO FRAGILE	SMALL TO MEDIUM, SLIGHTLY STEPPY	MEDIUM TO SMALL AMOUNT	MEDIUM TO SMALL	SMALL AMOUNT	NONE
	5-10	50-70	4·0	55-70	3·0	80-95	2·5-5·0	·83-·95	23·5-26	"	"	"	"	"	"	"	"	"
	10-15	70-50	5·0	55-70	3·0	80-95	2·5-5·0	·95	26	"	"	"	"	"	"	"	"	"
VIII		50-70	2·0-5·0	45-65	4·0-5·0	80-80	2·5-7·0	·85-·95	24-26	GOOD	STEEL GREY, IRREGULAR	SLIGHTLY TRIANGULAR AND FINGERY	HARD TO FRAGILE; FRIABLE	MEDIUM AMOUNT; SLIGHTLY STEPPY	MEDIUM AMOUNT	MEDIUM; IRREGULAR	SMALL AMOUNT	NONE
IX	0·5	45-55	4·0	70	3·0	93	2·5	·80-·86	22-25	GOOD	STEEL GREY, SLIGHTLY IRREGULAR	BLOCKY; SLIGHTLY TRIANGULAR	TOUGH TO HARD	SMALL TO MEDIUM; SLIGHTLY STEPPY	SMALL TO MEDIUM AMOUNT	SMALL TO MEDIUM	SMALL AMOUNT	NONE
	5-10	55-80	2·0	70-60	3·0-5·0	90	2·5	·86-1·1	25-31·5		"	"	"	"	"	"	"	"
	10-15	80-55	2·0-4·0	70-60	3·0-5·0	90	2·5	1·1-·92	31·5-25		"	"	"	"	"	"	"	"
X		70-80	3·0-5·0	65-80	10·0-5·0	70-80	10·0-7·0	·95-1·1	26·30	FAIR TO GOOD	DULL; GRANULAR	BLOCKY; IRREGULAR	TOUGH; FRIABLE	SMALL AMOUNT; SLIGHTLY STEPPY	SMALL AMOUNT	SMALL TO MEDIUM	GRANULAR ENDS	PEBBLY
XI		70-80	3·0	70-80	5·0	85-90	3·0-4·0	1·0-1·1	30-31	FAIR	DULL TO STEEL GREY; IRREGULAR	BLOCKY; SQUARE	TOUGH	SMALL AMOUNT; VERY SLIGHTLY STEPPY	SMALL AMOUNT	IRREGULAR	VERY LITTLE	NONE
XII		80	3·0	80	5·0	85	4·0	1·0-1·1	30-31	FAIR TO POOR	DULL GREY, IRREGULAR	BLOCKY; IRREGULAR	TOUGH; FRIABLE	VERY SMALL AMOUNT; IRREGULAR	VERY LITTLE	IRREGULAR	VERY LITTLE	NONE
XIII		25-70	4·0-3·0	30-70	20·0-5·0	50-80	15·0-5·0	·85-1·1	23·5-28	GOOD	DULL GREY, GRANULAR	BLOCKY; IRREGULAR	FRIABLE	SMALL TO MED. AMOUNT; IRREGULAR	SMALL TO MEDIUM AMOUNT	VERY LITTLE TO NONE	GRANULAR ENDS	PEBBLY TO NON COKING

*DIFFICULT TO DISCHARGE

Chart 2. Classification for By-product Cokes according to their physical properties, employing Volatile Matter and "Swelling Index" at 600° C. of the coal.

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.

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 directory does not indicate the variation in quality that might or should be expected. Appendix II has been included to present the minimum and maximum as well as the average ash contents, on the dry basis, of practically all the coals listed in the directory. The number of samples analysed is also shown. Fortified with this information the individual concerned can judge for himself whether or not any analysis of a Canadian coal which he might be considering comes within the range upon which the average analysis, listed in the directory, has been based.

Adjusting Calorific Values in Accordance with Ash and Moisture Content

The calorific value of a coal on the 'as received' ('as delivered') basis varies in accordance with the ash and moisture content of the coal. The calorific value of the pure coal, that is, less the moisture and mineral matter, is usually characteristic of each seam. Thus if one has a reasonably accurate figure for the calorific value of the coal on the dry mineral matter-free basis it is simple enough to calculate the calorific value to any moisture and ash basis.

In Appendix II are presented on the dry mineral matter-free basis the calorific values of practically all the Canadian coals listed in the Directory. These have been calculated in accordance with the following formula [6]:—

$$\text{B.t.u. Dry MM-Free} = \frac{\text{B.t.u. (as received)}}{100-(1.1A+0.1S+M)} \times 100$$

where:—
MM = Mineral Matter
S = percentage of Sulphur
A = percentage of Ash
M = percentage of Moisture

To calculate the calorific value of a coal from the dry mineral matter-free basis to a known ash and moisture content, that is, to the 'as received' basis, the following formula is employed:—

$$\text{B.t.u. (as received basis)} = \frac{\text{B.t.u. Dry MM-Free}}{100} \times 100\text{-}(1.1A+0.1S+M)$$

[6] A.S.T.M.—Designation 388-38: "Specifications for Classification of Coal by Rank"—A.S.T.M. Standards on Coal and Coke.

In correcting for sulphur, the average value for the sulphur content of the coal as indicated in the directory may be used, as the sulphur is usually more uniform than the ash, and furthermore only one-tenth of the sulphur percentage is used.

An example of the use of the above formula is as follows:—

Let us say the dry mineral matter-free calorific value of the coal is 15,000 B.t.u./lb.

It is desired to calculate the B.t.u. to an 'as received' basis, the coal containing 10 per cent ash and 2·5 per cent moisture, the average sulphur according to the directory being 1·5 per cent.

$$\text{B.t.u. (as received)} = \frac{15{,}000}{100} \times \Big(100 - [(1.1 \times 10.0) + (0.1 \times 1.5) + 2.5]\Big)$$

$$= \frac{15{,}000}{100} \times (100 - 13.25)$$

$$= \frac{15{,}000}{100} \times 86.75 = 13{,}013 \text{ B.t.u./lb.}$$

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:—

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

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.*[7]

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.

[7] "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).

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[7].

Analyses of United States and British Anthracites

For comparative purposes average and/or typical analyses of United States and British anthracites are presented in Appendix I.

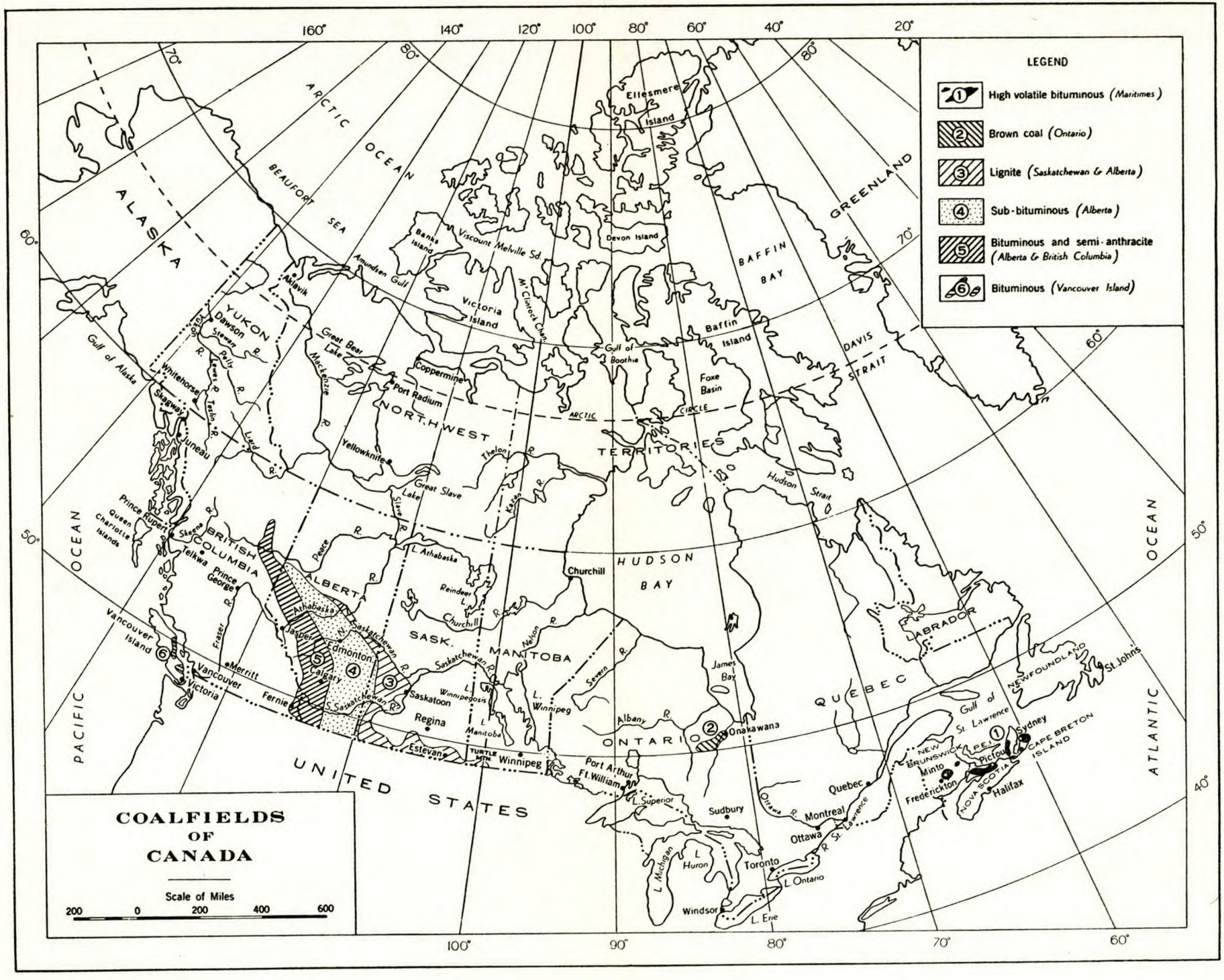
GLOSSARY OF ABBREVIATED TERMS

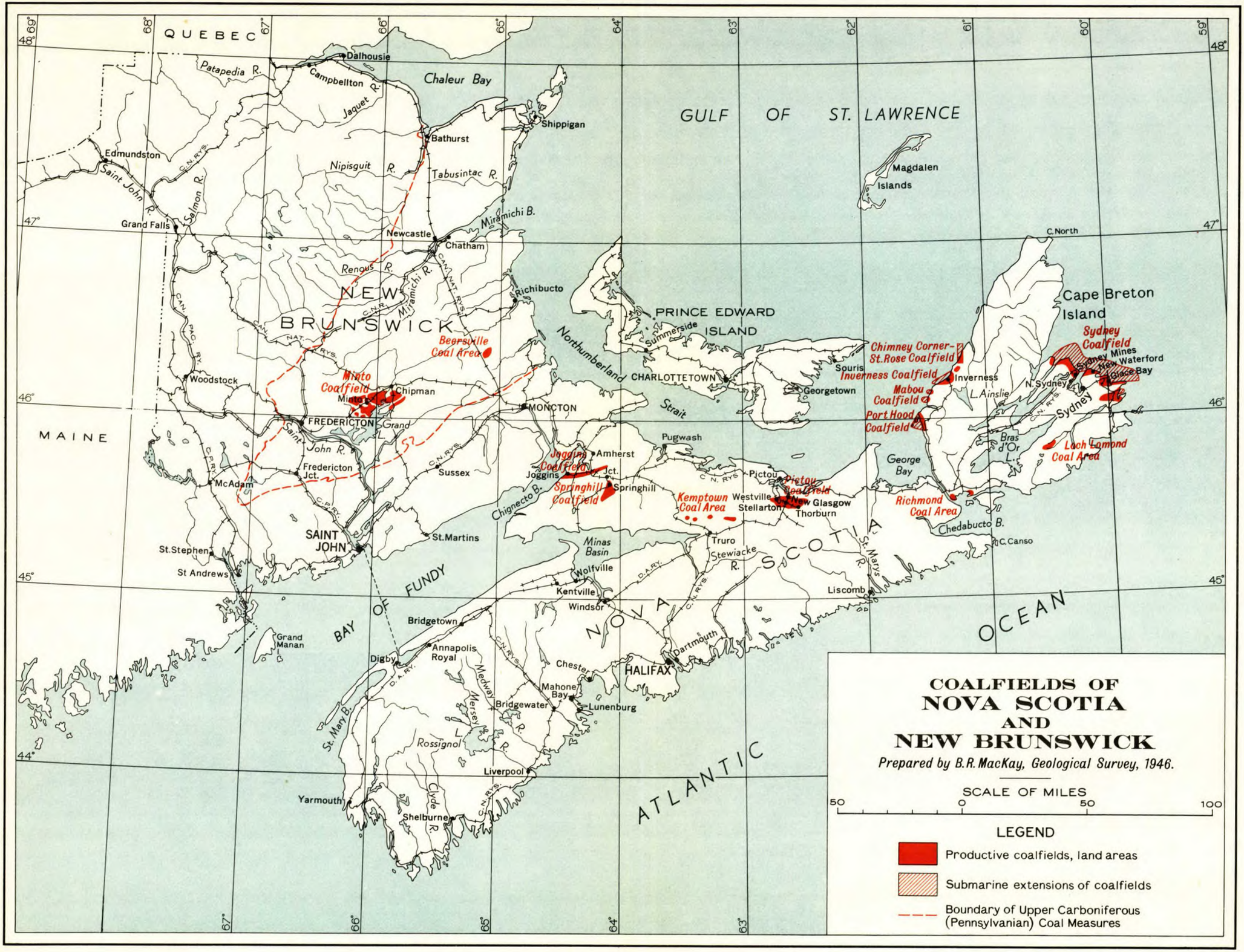
Screen Sizes

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


COALFIELDS OF CANADA
Scale of Miles
200 0 200 400 600
LEGEND
① High volatile bituminous (Maritimes)
② Brown coal (Ontario)
③ Lignite (Saskatchewan & Alberta)
④ Sub-bituminous (Alberta)
⑤ Bituminous and semi-anthracite (Alberta & British Columbia)
⑥ Bituminous (Vancouver Island)
ARCTIC OCEAN
BEAUFORT SEA
ALASKA
GREENLAND
BAFFIN BAY
DAVIS STRAIT
Ellesmere Island
Banks Island
Victoria Island
Baffin Island
Devon Island
Viscount Melville Sd.
M'Clintock Chan.
Amundsen Gulf
Gulf of Boothia
Foxe Basin
Akiavik
YUKON
Dawson
Stewart R.
Pelly R.
Lewes R.
Whitehorse
Gulf of Alaska
Skagway
Teslin R.
Juneau
Great Bear Lake
MacKenzie R.
Coppermine
Port Radium
NORTHWEST TERRITORIES
ARCTIC CIRCLE
Yellowknife
Thelon R.
Great Slave Lake
Slave R.
Athabaska R.
Hudson Strait
Prince Rupert
Queen Charlotte Islands
Skeena R.
BRITISH COLUMBIA
Telkwa
Prince George
Peace R.
L. Athabaska
ALBERTA
Churchill
HUDSON BAY
Reindeer L.
Churchill R.
Nelson R.
Vancouver Island
Fraser R.
Merritt
Vancouver
Victoria
Jasper
Edmonton
Calgary
Saskatchewan R.
SASK.
MANITOBA
Severn R.
James Bay
LABRADOR
NEWFOUNDLAND
St. Johns
Fernie
Saskatoon
Regina
L. Winnipegosis
L. Manitoba
L. Winnipeg
Albany R.
QUEBEC
Gulf of St. Lawrence
Sydney
CAPE BRETON ISLAND
NEW BRUNSWICK
P.E.I.
Pictou
Minto
Fredericton
NOVA SCOTIA
Halifax
Onakawana
ONTARIO
Estevan
TURTLE MTN.
Winnipeg
Port Arthur
Ft. William
L. Superior
Sudbury
Quebec
Ottawa R.
Montreal
Ottawa
St. Lawrence R.
L. Michigan
L. Huron
Toronto
L. Ontario
Windsor
L. Erie
PACIFIC OCEAN
ATLANTIC OCEAN
UNITED STATES
160° 140° 120° 100° 80° 60° 40° 20°
70° 80° 80° 70° 60° 60° 50° 50° 40°
100° 90° 80° 70° 60°



COALFIELDS OF NOVA SCOTIA AND NEW BRUNSWICK

Prepared by B.R. MacKay, Geological Survey, 1946.

SCALE OF MILES

50 0 50 100

LEGEND

- Productive coalfields, land areas
- Submarine extensions of coalfields
- Boundary of Upper Carboniferous (Pennsylvanian) Coal Measures

Province	NOVA SCOTIA
Area	**Sydney (Cape Breton County)**
Operator	Beaver Coal Co. Ltd.
Mine	Beaver
Trade name	**BEAVER**
Output.....approx. tons/annum	4,000
Location of Mine	Broughton, N.S.
Seam	Tracey
Size	Mine Run
Screen limits at mine.....in.	
No. of samples	1
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	3·0
Ash.....%	11·6
Volatile matter.....%	34·3
Fixed carbon.....%	51·1
Calorific value (As received).....B.t.u./lb.	12,150
Ash softening temperature.....°F.	1970
Caking Properties—	
Volatile matter residue—950°C	Poor
Caking index (Gray)	
Swelling Properties—	
Swelling index (A.S.T.M.)	4
Swelling index (F.R.L.)	
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	6·0
Oxygen.....%	
Classification by Rank—	
A.S.T.M	High volatile A bituminous
S.V.I	158—Border of para and subbituminous

Province	NOVA SCOTIA
Area	**Sydney (Cape Breton County)**
Operator	Bras d'Or Coal Co. Ltd.
Mine	Franklin (1) and Colonial No. 1 (2)
Trade name	**BRAS d'OR; COLONIAL**
Output.....approx. tons/annum	150-200,000
Location of Mine	Little Bras d'Or
Seam	Colonial—Lower Jubilee (Collins); Franklin—Upper Jubilee (Sullivan) *

Size	Mine Run	Lump, Egg (3)	Stoker (4)	Slack (5)
Screen limits at mine.....in.		+1	$\frac{3}{16}$ x 1	0 x 1
No. of samples	18	22	9	68
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	5·2	4·8	4·9	6·4
Ash.....%	12·4	12·1	10·9	14·0
Volatile matter.....%	33·1	34·8	33·8	31·6
Fixed carbon.....%	49·3	48·3	50·4	48·0
Calorific value (As received).....B.t.u./lb.	12,115	12,100	12,100	11,510
Ash softening temperature.....°F.	2050	2050	2080	2060
Caking Properties—				
Volatile matter residue—950°C		Fair to Good		
Caking index (Gray)	50			
Swelling Properties—				
Swelling index (A.S.T.M.)	4·0	4·0	4·0	3·5–4·0
Swelling index (F.R.L.)	250–400	350	280–400	145–415
Ultimate Analysis (As received)—				
Carbon.....%	64·8			
Hydrogen.....%	4·1			
Nitrogen.....%	1·2			
Sulphur.....%	5·6	5·2	4·9	5·5
Oxygen.....%	6·7			
Classification by Rank—				
A.S.T.M.		High volatile A bituminous		
S.V.I.		162—Parabituminous		
Physical Properties—				
Bulk density.....lb./cu. ft.	52·5	52·7	46·2	52·3
cu. ft./ton	38·1	38·0	43·3	38·2
Grindability index	68·0	69·0	66·4	70·5

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
%	23·2	14·7	50·8	4·0	0·7	0·2	0·7	1·0	0·5	0·5	4·7

Remarks—

(1) Franklin mine opened in 1937 with the bulk of the coal coming from this mine during the last five years.

(2) This mine has recently been equipped with machines for dry cleaning all coal passing the $4\frac{1}{2}$" screen.

(3) Also + $\frac{5}{16}$" and + $1\frac{3}{4}$".

(4) Also $\frac{3}{16}$" x $\frac{5}{16}$" and $\frac{5}{16}$" x 1".

(5) Also 0 x $\frac{3}{16}$", 0 x $\frac{5}{16}$", and 0 x $1\frac{3}{4}$".

* Seams are approximately 4 ft. thick.

NOVA SCOTIA

Sydney (Cape Breton County)

DOMINION COAL CO. LTD.

Nos. 1B, 2, 4, 11, 12, 16, 18, 20, 24, 25 AND 26*

DOMINION

4–5,000,000

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

Lump	Screened Mine Run	Mine Run	Stoker	Nut Slack (4)	Slack
+ 1¼ rd.	+ ¾ rd.		¼ x ¾ or 1¼ rd.	0 x 1¼ or 1½ rd.	0 x ¾ rd.
60	15	69	2	64	321
3·0	3·0	3·4	3·0	4·0	5·4
8·9	9·8	9·0	7·4	9·3	10·4
33·6	32·5	32·4	33·9	31·5	30·7
54·5	54·7	55·2	55·7	55·2	53·5
13,350	13,220	13,310	13,625	13,140	12,640
2075	1995	2060	1965	2045	2060
Good	Good	Good 55	Good	Fair—Good	Fair—Good
(2) 5·5–8·0	5·5–9·0	5·5–9·0 455	5·5–9·0	5·0–8·0	5·0–9·0
75·1		73·5			71·0
5·0		4·8			4·7
1·4		1·4			1·3
2·9	3·6	3·1	2·8	3·2	2·8
3·7		4·8			4·4
		High volatile A bituminous 171—Parabituminous			
50·3	51·0	52·7	45·5	52·3	52·1
39·5	39·2	37·9	43·9	38·2	38·4
68·0	68·0	67·0	66·0	68·0	68·0

(3)	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—

(1) Phalen—Nos. 1B, 2, 4, 16 and 18 mines (From about 4 ft. 8 in. to 6 ft. thick.)
Emery—Nos. 11 and 24 mines. (Approx. 3 ft. thick).
Harbour—Nos. 12, 20 and 26 mines (From about 4 ft. 6 in. to 6 ft. thick.)
Gardiner—No. 25 mine. (Approx. 3 ft. 8 in. thick.)

(2) The average swelling indexes for the various seams are as follows:

	FRL	ASTM
Phalen	903	7-9
Harbour	281	7-8
Emery	460	6-8
Gardiner	222	5-7

(3) The ash analyses vary from seam to seam and within the seam.

(4) Also called "stoker slack".

* Nos. 2 and 11 mines have been closed recently.

Province	NOVA SCOTIA
Area	**Sydney (Cape Breton County)**
Operator	Four Star Collieries Ltd.
Mine	Four Star
Trade name	**FOUR STAR**
Output.....approx. tons/annum	(1)
Location of Mine	Broughton, N.S.
Seam	Tracey *

	Lump	Stoker	Slack
Size			
Screen limits at mine.....in.	Plus 1 (2)	$\frac{3}{16}$ x 1 (3)	0 x 1 (4)
No. of samples	4	1	5
Chemical Properties—			
Proximate Analysis (As received)— (5)			
Moisture.....%	2·5	2·5	3·5
Ash.....%	10·8	9·3	14·7
Volatile matter.....%	35·4	36·1	33·5
Fixed carbon.....%	51·3	52·1	48·3
Calorific value (As received).....B.t.u./lb.	12,530	12,900	11,755
Ash softening temperature.....°F.	2120	2000	2070
Caking Properties—			
Volatile matter residue—950°C	Poor	Poor	Poor
Caking index (Gray)			
Swelling Properties—			
Swelling index (A.S.T.M.)	4	5	4
Swelling index (F.R.L.)	350	300	250
Ultimate Analysis (As received)—			
Carbon.....%			
Hydrogen.....%			
Nitrogen.....%			
Sulphur.....%	6·2	5·3	5·5
Oxygen.....%			
Classification by Rank—			
A.S.T.M.	High volatile A bituminous		
S.V.I.	159—Border of para and subbituminous		
Physical Properties—			
Bulk density.....lb./cu. ft.	50·0		
cu. ft./ton	40·0		
Grindability index	77	73	87

Analysis 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	15·2	43·0	5·2	0·6	0·1	0·3	1·5	1·2	0·7	4·0

Remarks—

(1) This mine is still in the development stage, 1952 production 19,000 tons.

(2) Also + $\frac{5}{16}$".

(3) Also $\frac{3}{16}$ x $\frac{5}{16}$" and $\frac{5}{16}$ x 1".

(4) Also 0 x $\frac{3}{16}$" and 0 x $\frac{5}{16}$".

(5) As this is a new operation no cleaning equipment has yet been installed. However, the analyses are based on samples taken during a commercial cleaning test at the Bras d'Or mine.

* Seam is approximately 6 ft. thick.

NOVA SCOTIA **Sydney (Cape Breton County)** INDIAN COVE COAL CO., LTD. GREENER; TOM PIT (1) **INDIAN COVE; TOM PIT** 50–70,000 Between Sydney Mines and North Sydney Upper Jubilee or Greener (No. 3) (2)			NOVA SCOTIA **Sydney (Cape Breton County)** INDIAN COVE COAL CO., LTD. STANLEY (3) **STANLEY** — Sydney Mines —
Mine Run	Lump $+\frac{3}{4}$, $+1\frac{1}{4}$ sq.	Slack $0 \times \frac{3}{4}$ sq.	Mine Run
5	16	12	1
5·0	4·0	6·5	6·0
12·9	13·4	16·1	19·3
35·1	34·6	32·3	31·9
47·0	48·0	45·1	42·8
11,880	12,020	11,155	10,495
1995	2020	2030	2050
Good	Fair	Fair	Good
71			
6	4·5	4·0	
181			Low
65·2			
4·5			
1·3			
6·5	6·2	5·9	8·2
4·6			
High volatile A bituminous 166—Parabituminous			High volatile A bituminous 149—Subbituminous (agglomerate)
56·0	49·0	51·5	56·3
35·7	40·8	38·8	35·5
70	71·6	73·5	

ANALYSES OF ASH— (Indian Cove; Tom Pit)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	24·7	14·3	48·1	5·9	0·06	0·07	—	1·2	0·2	0·4	4·9

REMARKS—

(1) The major part of the coal since 1943 has been obtained from the Greener opening of the mine. Lump is handpicked as loaded into trucks.

(2) Seam thickness—average 52·5 in.

(3) Formerly British Coal Co., Ltd., not listed since 1943.

Province	NOVA SCOTIA
Area	**Sydney (Cape Breton County)**
Operator	INDIAN COVE COAL CO., LTD.,
Mine	TOMSON (1)
Trade name	**INDIAN COVE; TOMSON**
Output.....approx. tons/annum	(2)
Location of Mine	Sydney Mines
Seam	Upper Jubilee or Greener (No. 3.) (3)

Size	Nut	Lump	Slack
Screen limits at mine.....in.	$\frac{3}{4}$ x $1\frac{1}{2}$ sq.	$+\frac{3}{4}$, $+1\frac{1}{2}$ sq.	0 x $\frac{3}{4}$ sq.
No. of samples	1	5	1
CHEMICAL PROPERTIES—			
Proximate Analysis (As received)—			
Moisture.....%	4·0	4·0	4·5
Ash.....%	11·1	12·3	17·5
Volatile matter.....%	37·3	36·0	34·1
Fixed carbon.....%	47·6	47·7	43·9
Calorific value (As received).....B.t.u./lb.	12,360	12,155	11,085
Ash softening temperature.....°F.	2080	2095	1900
Caking Properties—			
Volatile matter residue—950°C	Poor	Good	Poor
Caking index (Gray)		62	
Swelling Properties—			
Swelling index (A.S.T.M.)	4·5	4	2·5
Swelling index (F.R.L.)		137	
Ultimate Analysis (As received)—			
Carbon.....%			
Hydrogen.....%			
Nitrogen.....%			
Sulphur.....%	6·0	6·7	6·7
Oxygen.....%			
Classification by Rank—			
A.S.T.M	High volatile A bituminous		
S.V.I	156—Parabituminous		
PHYSICAL PROPERTIES—			
Bulk density.....lb./cu. ft.	47·0	51·0	51·5
cu. ft./ton	42·6	39·2	38·8
Grindability index	69·0		70·9

REMARKS—

(1) Formerly the property of the British Coal Co., Ltd. (Indian Cove since 1941) and at that time known as Thompson mine.

(2) Included with output from Greener mine. About 150 tons per day. Coal handpicked as it is loaded into trucks.

(3) Seam thickness average 48 in.

NOVA SCOTIA **Sydney (Cape Breton County)** OLD SYDNEY COLLIERIES, LTD. (1) PRINCESS; FLORENCE (2) **PRINCESS; FLORENCE; OLD SYDNEY** 700–900,000 Sydney Mines and Florence Harbour			NOVA SCOTIA **Sydney (Cape Breton County)** SULLIVAN COAL CO., LTD. (3) SULLIVAN **SULLIVAN** 10–20,000 Sydney Mines Sullivan or Crawley (No. 3)		
Mine Run	Lump	Slack, Nut Slack	Mine Run	Lump	Slack
	+¾, +1½	0 x ¾, 1½		+⅞ sq.	0 x ⅞ sq.
3	9	13	2	5	4
4·0	3·1	5·0	6·0	5·0	7·0
5·2	4·8	5·3	8·7	8·6	10·3
36·1	36·5	35·2	34·4	35·1	32·6
54·7	55·6	54·5	50·9	51·3	50·1
13,545	13,940	13,530	12,420	12,845	12,025
2040	2080	2105	2070	2050	2035
Good	Good	Good	Good	Good	Good
53			57		
7½–8½			5		
280			62		
76·3				70·3	
5·0				4·8	
1·5				1·4	
2·0	1·7	1·5	3·9	3·8	3·2
6·0				6·1	
High volatile A bituminous 159—Parabituminous			High volatile A bituminous 154—Parabituminous		
55·0	45·0	51·0	56·0	48·0	51·0
36·4	44·4	39·2	35·7	41·6	49·2
69·0	64·0	75·0	61·0		65·0

ANALYSES OF ASH— (Princess; Florence; Old Sydney)

	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

ANALYSES OF ASH— (Sullivan)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	21·9	12·8	50·7	6·0	1·1	0·2	0·9	0·6	0·1	0·6	5·3

REMARKS—

(1) Formerly Nova Scotia Steel & Coal Co., Ltd.

(2) Wet washer (Baum-type jig) installed and started operating in 1953. All sizes above ¼ in. are being cleaned, and in addition to other sizes, a special stoker size is prepared. Very recent analyses indicate ash contents as low as 3·0%.

(3) Last listed in 1946 (associated with Indian Cove Coal Co. Ltd.).

Province	NOVA SCOTIA
Area	**Inverness (St. Rose Basin)**
Operator	Evans' Coal Mines Ltd. (1)
Mine	Evans (2)
Trade name	**EVANS**
Output.....approx. tons/annum	2-4,000
Location of Mine	St. Rose (12 miles N. of Inverness)
Seam	No. 5 (8 ft. 11 in.)
Size	Screened Mine Run (3)
Screen limits at mine.....in.	+ 1 sq.
No. of samples	3
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	7·0
Ash.....%	10·6
Volatile matter.....%	34·5
Fixed carbon.....%	47·9
Calorific value (As received).....B.t.u./lb.	11,545
Ash softening temperature.....°F.	2070
Caking Properties—	
Volatile matter residue—950°C.	Poor
Caking index (Gray)	17
Swelling Properties—	
Swelling index (A.S.T.M.)	0
Swelling index (F.R.L.)	−193 (Contracting)
Ultimate Analysis (As received)—	
Carbon.....%	63·8
Hydrogen.....%	4·2
Nitrogen.....%	1·3
Sulphur.....%	6·9
Oxygen.....%	6·2
Analyses for Classification—	
Capacity moisture.....%	10·2
B.t.u./lb.....(capacity moisture basis)	11,150
Classification by Rank—	
A.S.T.M.	High volatile C bituminous
S.V.I.	144—Subbituminous (agglomerate)
Physical Properties—	
Bulk density.....lb./cu. ft.	52·0
cu. ft./ton	38·5
Grindability index	65·0

Remarks—

(1) Formerly Dean Evans.

(2) Formerly St. Rose mine.

(3) Also prepared + 1 in. and + 1½ in. lump, and 0 x 1 in. slack.

NOVA SCOTIA **Inverness (Inverness Basin)** INVERNESS COAL MINE (NOVA SCOTIA GOVT.) (1) INVERNESS No. 5 (2) **INVERNESS** (3) Inverness (Inverside) 13 foot			NOVA SCOTIA **Inverness (Inverness Basin)** MARGAREE STEAMSHIP COMPANY LIMITED MACDONALD Nos. 1, 3, AND 5 **MACDONALD** 30-40,000 (4) Inverness, N.S. Nos. 1, 3 and 5 *	
Mine Run	Lump +$\frac{5}{8}$ rd.	Slack 0 x $\frac{5}{8}$ rd.	Mine Run	Slack 0 x $1\frac{1}{2}$ sq.
7	5	5	2	2
9·0	8·0	12·0	8·0	8·3
12·6	11·2	13·5	9·9	25·6
35·2	37·1	33·2	38·0	30·3
43·2	43·7	41·3	44·1	35·8
10,670	10,960	10,155	11,050	8,590 (5)
2165	2055	2070	2110	
Poor 14	Poor	Poor	Agglomerate	
0 −155 (Contracting)	0	0	0	
59·5 4·0 1·2 6·5 7·2	6·8	5·7	5·9	
9·2	9·2	9·2	9·2	9·2
10,650	10,815	10,480	10,905	8,505
High volatile C bituminous 133—Subbituminous			High volatile C bituminous 117—Lignitic (6)	
57·0	47·5	51·0	49·5	
35·1	42·1	39·2	40·4	
62·0	59·0	63·0		

ANALYSES OF ASH— (Inverness)

	SiO_2	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) Closed down in 1951. (2) In previous years, mines No. 1 and No. 4 on the 7 foot and 13 foot seams respectively were the producing mines. No. 4 was closed down in 1944 and operations in No. 1 were terminated in 1946. Mine No. 5 closed down in 1951. (3) Output dropped from 150,000 in 1941 to under 10,000 in 1945. In 1950 output was 31,000 tons. (4) Output in 1952: No. 1 seam (7′)—180 tons/day (salvaging pillars); No. 3 seam (28″)—Development; No. 5 seam (13′)—180 tons/day (room and pillar work). (5) Calculated. (6) Low specific volatile index due to oxidation of coal in seam. *No. 1 seam approx. 7 ft. thick; No. 3 seam approx. 28 in. thick; No. 5 seam approx. 13 ft. thick with only lower 3·5 to 5 ft. mined.

Province	NOVA SCOTIA
Area	**Inverness (Port Hood Basin)**
Operator	PORT HOOD COAL MINE (GARSON AND GARSON)
Mine	PORT HOOD (1)
Trade name	**PORT HOOD**
Output.....approx. tons/annum	
Location of Mine	Port Hood, N.S.
Seam	Main or six-foot

Size	Mine Run	Lump	Slack	Fines
Screen limits at mine.....in.		$\frac{1}{8}$ x 4	0 x $\frac{3}{4}$, 1$\frac{1}{2}$	0 x $\frac{1}{8}$
No. of samples	2	3	2	2
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	5·4	4·6	4·6	5·8
Ash.....%	14·9	16·1	14·6	14·0
Volatile matter.....%	34·0	33·6	34·2	33·5
Fixed carbon.....%	45·7	45·7	46·6	46·7
Calorific value (As received).....B.t.u./lb.	11,040	10,855	11,135	11,100
Ash softening temperature.....°F.	1980	1970	1935	1950
Caking Properties—				
Volatile matter residue—950°C	Poor	Poor	Poor	Poor
Caking index (Gray)	24			
Swelling Properties—				
Swelling index (A.S.T.M.)	1			
Swelling index (F.R.L.)	−200 (Contracting)			
Ultimate Analysis (As received)—				
Carbon.....%	60·9			
Hydrogen.....%	4·1			
Nitrogen.....%	1·4			
Sulphur.....%	7·9	7·9	7·3	6·8
Oxygen.....%	5·4			
Analyses for Classification—				
Capacity moisture.....%	(2)			
B.t.u./lb.....(capacity moisture basis)				
Classification by Rank—				
A.S.T.M.	High volatile C bituminous			
S.V.I.	141—Subbituminous			
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	63·0	56·5	52·5	48·0
cu. ft./ton	31·7	35·4	38·1	41·6
Grindability index	62·0	65·0	61·0	61·0

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
%	32·6	11·5	41·7	5·3	0·3	0·04	1·3	0·3	2·1	0·5	4·5

REMARKS—

(1) Closed down since 1941.

(2) No data on capacity moisture; but it would appear to be lower than coals in Inverness and St. Rose basins.

NOVA SCOTIA **Springhill (Cumberland County)**					NOVA SCOTIA **Joggins (Cumberland County)**
CUMBERLAND RAILWAY AND COAL COMPANY (1) SPRINGHILL No. 1, No. 2, No. 4 **SPRINGHILL** 500-800,000 Springhill No. 1 and 2 (No. 2 Mine), No. 4 and 6 (No. 4 Mine)*					ARSENEAU, A. J. (5) ARSENEAU **ARSENEAU** 2-8,000 River Hebert Queen
Mine Run	Lump + 1 rd., + 4 rd.	Nut(2) 1 x 2¾ rd.	Pea, (3) Stoker ¼ sq. x 1 rd.	Slack (4) 0 x 1, or 2¾ rd.	Mine Run
7	14	4	49	57	2
3·0	2·6	2·5	3·4	3·5	4·0
9·5	8·6	8·5	12·8	11·4	18·7
30·1	30·4	30·1	28·3	29·5	32·9
57·4	58·4	58·9	55·5	55·6	44·4
13,195	13,405	13,475	12,740	12,890	10,810
2200	2150	2165	2125	2130	2105
Good 49	Good	Good	Good	Good	Fair
	8·0-9·0 500-600				3-5
73·5 4·7 1·9 1·6 5·8	1·9	1·5	1·7	71·8 4·6 1·9 1·8 5·0	6·4
	High volatile A bituminous 168—Parabituminous				High volatile A bituminous 145—Subbituminous (agglomerate)
51·5	52·5	46·0	49·6	55·2	58·5
38·8	38·1	43·5	40·3	36·2	34·2
84·0	84·0			86·0	

ANALYSES OF ASH— (Springhill)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	44·4	19·5	15·4	7·3	1·5	0·1	1·7	2·0	0·6	0·8	7·2

REMARKS:

* The coal from the various Springhill seams is not segregated.

(1) ¼ x 4 in. coal cleaned in a Baum-type jig. (2) Washed nut.

(3) Washed Pea is lower in ash—averaging about 9·5% ash and 13,200 Btu/lb.

(4) 0 x ¼ in. unwashed fines has lower bulk density (46·0 lb./cu. ft.) and higher grindability index (94·0).

(5) Previously listed as operated by Maritime Coal Railway & Power Co., Ltd., but not listed since 1947.

Province	NOVA SCOTIA
Area	**Joggins (Cumberland County)**
Operator	CUMBERLAND FUEL AND TRADING COMPANY LIMITED
Mine	COCHRANE-No. 1 MINE (1)
Trade name	**COCHRANE**
Output.....approx. tons/annum	20,000 (2)
Location of Mine	Near River Hebert
Seam	Kimberley (34 in.)

Size	Lump (3)	Slack
Screen limits at mine.....in.	+1	0 x 1
No. of samples	1	2
CHEMICAL PROPERTIES—		
Proximate Analysis (As received)—		
Moisture.....%	3·0	5·0
Ash.....%	12·3	19·5
Volatile matter.....%	35·1	31·4
Fixed carbon.....%	49·6	44·1
Calorific value (As received).....B.t.u./lb.	12,190	10,800
Ash softening temperature.....°F.	2000	2075
Caking Properties—		
Volatile matter residue—950°C	Poor	Poor
Caking index (Gray)		
Swelling Properties—		
Swelling index (A.S.T.M.)	5·0	3·0
Swelling index (F.R.L.)		
Ultimate Analysis (As received)—		
Carbon.....%		
Hydrogen.....%		
Nitrogen.....%		
Sulphur.....%	7·0	4·8
Oxygen.....%		
Classification by Rank—		
A.S.T.M.	High volatile A bituminous	
S.V.I.	150—Parabituminous	
PHYSICAL PROPERTIES—		
Bulk density.....lb./cu. ft.	50·0	53·8
cu. ft./ton	40·0	37·2
Grindability index	69·1	65·0

REMARKS—

(1) No mechanical cleaning equipment. Only lump hand picked.

(2) Output approx. 150 tons/day.

(3) Also prepare ½ x 1 in. Nut.

NOVA SCOTIA **Joggins (Cumberland County)** HILLCREST MINING COMPANY LIMITED (1) HILLCREST **HILLCREST** — Joggins (1 mile east of Bayview Mine) Forty Brine (Approx. 24 in. thick)			NOVA SCOTIA **Joggins (Cumberland County)** JOGGINS COAL COMPANY LIMITED (3) BAYVIEW No. 8 **BAYVIEW** 110-135,000 1 mile north of Joggins Forty Brine (26·5 in.)			
Mine Run (2)	Lump +⅝ sq. 4	Slack 0 x ⅝ sq. 4	Mine Run (5)	Lump (4) +⅝ sq. 13	Nut and Pea ⅝ x 1 sq. 2	Slack 0 x ⅝ sq. 24
4·6	4·0	5·5	4·6	4·0	4·0	5·5
19·2	13·8	27·4	21·1	16·0	27·8	28·0
32·2	34·2	29·2	31·0	32·9	30·1	28·9
44·0	48·0	37·9	43·3	47·1	38·1	37·6
10,790	11,760	9,340	10,515	11,470	9,520	9,310
2040	2000	2105	2065	2035	2115	2090
Fair	Good 58	Fair	Fair	Good 59	Fair	Fair
	5-6 157			4·0 217		4·5
61·0			59·6			
4·3			4·2			
1·8			1·8			
5·5	5·4	5·5	5·7	5·4	6·8	5·9
3·6			3·0			
	High volatile A bituminous 150—Parabituminous			High volatile A bituminous 151—Parabituminous		
60·0	53·0	57·0	60·0	53·3	54·5	54·0
33·3	37·7	35·1	33·3	37·5	36·8	37·0
76·0		74·0	75·0	72·6		74·3

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) Apparently successor to Victoria Coal Co. Ltd., operating Victoria No. 4 mine in Joggins Bench seam. This mine closed down in 1941. The Hillcrest mine was started in 1940. It closed in 1948. (2) This is a calculated analysis based on a mixture of 60% lump and 40% slack. (3) This company operated Maple Leaf No. 4 mine near River Hebert. The mine was closed down in 1939, when Bayview No. 8 was opened. The company is a subsidiary of Maritime Coal, Rlwy. & Power Co. Limited. (4) Also + 1 in. lump. (5) This analysis is based on a mixture of 60% + ⅝ in. lump and 40% 0 x ⅝ in. slack.

Province	NOVA SCOTIA
Area	**Joggins (Cumberland County)**
Operator	Riverside Coal Company Limited (1)
Mine	Riverside
Trade name	**RIVERSIDE**
Output ..... approx. tons/annum	20–30,000
Location of Mine	River Hebert
Seam	

	Lump	Slack
Size	Lump	Slack
Screen limits at mine ..... in.	+ ¾ sq.	0 x ¾ sq.
No. of samples	1	1
Chemical Properties—		
Proximate Analysis (As received)—		
Moisture ..... %	3·0	5·5
Ash ..... %	18·0	17·0
Volatile matter ..... %	35·8	34·4
Fixed carbon ..... %	43·2	43·1
Calorific value (As received) ..... B.t.u./lb.	11,265	10,920
Ash softening temperature ..... °F.	1950	2010
Caking Properties—		
Volatile matter residue—950°C	Poor	Poor
Caking index (Gray)		
Swelling Properties—		
Swelling index (A.S.T.M.)	3–5	
Swelling index (F.R.L.)		
Ultimate Analysis (As received)—		
Carbon ..... %		
Hydrogen ..... %		
Nitrogen ..... %		
Sulphur ..... %	6·1	5·5
Oxygen ..... %		
Classification by Rank—		
A.S.T.M.	High volatile A bituminous	
S.V.I.	150—Border of para and subbituminous	
Physical Properties—		
Bulk density ..... lb./cu. ft.		
cu. ft./ton		
Grindability index		

Remarks—

(1) Closed in 1952.

NOVA SCOTIA **Joggins (Cumberland County)** SHORE COAL COMPANY (HUGH GORDON) (1) SEASHORE One mile North of Joggins Fundy		NOVA SCOTIA **Joggins (Cumberland County)** STANDARD COAL CO., LIMITED STRATHCONA No. 2 (2) **STRATHCONA OR STANDARD** River Hebert Kimberley		
Lump	Slack	Mine Run	Lump	Slack
+ $\frac{5}{8}$ sq.	0 x $\frac{5}{8}$ sq.		+ $\frac{5}{8}$ sq., + $1\frac{1}{4}$ sq.	0 x $\frac{5}{8}$, $1\frac{1}{4}$ sq.
2	1	42	9	6
5·0	7·5	4·5	4·0	5·5
19·0	32·2	18·3	15·6	19·4
32·9	27·0	31·1	33·1	30·1
43·1	33·3	46·1	47·3	45·0
10,565	8,140	11,195	11,555	10,830
2010	2210	2045	2030	2095
Fair	Poor	Fair	Fair to Good	Fair
		58		
3–5		5–6		
		144		
56·2		62·1		
3·9		4·2		
1·1		1·4		
7·6	5·6	5·2	6·0	4·4
7·2		4·3		
High volatile A bituminous 147—Subbituminous (agglomerate)		High volatile A bituminous 159—Parabituminous		
57·0	59·0	59·0	54·0	57·0
35·1	33·9	33·9	37·1	35·1
		66·0		70·0

ANALYSES OF ASH— (Strathcona or Standard)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	36·2	16·4	25·3	8·5	2·1	0·14	0·5	2·1	1·5	0·5	7·3

REMARKS—

(1) Salvage operation—not listed since 1944.

(2) This mine, successor to Strathcona No. 1, was opened in 1938 and closed in 1948.

Province	NOVA SCOTIA
Area	**Stellarton District (Pictou County)**
Operator	Acadia Coal Co. Ltd.
Mine	Allan & Acadia No. 7 (1)
Trade name	**ACADIA (ALLAN)**
Output.....approx. tons/annum	160-200,000
Location of Mine	Stellarton
Seam	Foord, Cage, Four-Foot, Third*

Size	Mine Run (2)	Lump (3)	Slack
Screen limits at mine.....in.		+1¼, 1½ or 2½ rd.	0 x 1¾ rd. 0 x ⅞ sq.
No. of samples	8	11	4
Chemical Properties—			
Proximate Analysis (As received)—			
Moisture.....%	2·5	2·0	5·5
Ash.....%	13·6	14·9	13·4
Volatile matter.....%	29·1	28·5	27·6
Fixed carbon.....%	54·8	54·6	53·5
Calorific value (As received).....B.t.u./lb.	12,625	12,515	12,180
Ash softening temperature.....°F.	2400	2590	2355
Caking Properties—			
Volatile matter residue—950°C	Fair to Good		Fair
Caking index (Gray)	41		
Swelling Properties—			
Swelling index (A.S.T.M.)		4·5—6	
Swelling index (F.R.L.)		67 (4)	
Ultimate Analysis (As received)—			
Carbon.....%	72·3		
Hydrogen.....%	4·6		
Nitrogen.....%	1·9		
Sulphur.....%	1·0	1·1	1·1
Oxygen.....%	4·1		
Classification by Rank—			
A.S.T.M.	High volatile A bituminous		
S.V.I.	168—Parabituminous		
Physical Properties—			
Bulk density.....lb./cu. ft.	57·0	55·4	54·9
cu. ft./ton	35·1	36·1	36·4
Grindability index	70·0		72·0

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
%	55·1	24·4	10·5	2·2	1·3	0·02	0·6	1·9	0·3	0·7	2·9

Remarks—

* Cage seam:—15 to 18 ft.; Four-Foot seam: 4 ft.; Third: 12 to 18 ft.

(1) Allan shaft closed down in 1951, Acadia No. 7 in 1947. (2) Railway mine run was crushed to pass a 5" or 6" screen. (3) Domestic lump was crushed to pass a 7" screen. (4) The swelling properties of the coal from the different seams represented in the above composite vary as follows:

Seam	F.R.L. Swelling Index
Foord	205
Cage	—237
Four-Foot	438
Third	—141

NOVA SCOTIA
Stellarton (Pictou County)

ACADIA COAL CO. LTD.
ALBION & MCGREGOR

ACADIA (ALBION)
150–240,000
Stellarton
Third, Cage, McGregor & Fleming, Acadia No. 1*

Mine Run	Lump	Stove (2)	Slack
(1)	+1¾, 2½, or 4 rd.	1¾ x 4 rd.	0 x ⅞ sq.
12	10		5
2·5	2·0	2·0	5·5
13·0	15·0	14·6	12·8
27·8	27·6	27·9	26·8
56·7	55·4	55·5	54·9
12,680	12,315	12,480	12,210
2510	2450	2400	2410
	Fair to Good		Fair
35			
1—2			
−130 (3)			
71·8			
4·5			
1·9			
1·3	1·6	1·5	1·4
5·0			
	High volatile A bituminous 169—Parabituminous		
56·0	55·4	46·5	52·8
35·7	36·1	43·0	37·9
65·0			67·0

NOVA SCOTIA
Stellarton (Pictou County)

ACADIA COAL CO., LTD. (10)
ALBION & MCGREGOR (4), ALLAN (9), ACADIA No. 7 (8) & MCBEAN (7)

ACADIA
360–530,000
Stellarton & Thorburn
Foord, Cage, & 4-Foot (Allan), Third & Cage (Albion), McGregor & Fleming (McGregor)

Mine Run and Railway Coal	Lump, Stove and Nut	Stoker	Slack
3/16 x 5	(5)	3/16 x ¾	0 x 3/16, ¾
16	34	3	11
2·5	2·0	3·5	5·5
13·8	15·1	12·1	13·3
28·0	28·0	29·3	27·1
55·7	54·9	55·1	54·1
12,605	12,460	12,725	12,135
2505	2490	2360	2340
	Fair to Good		Fair
38			
3—6			
−25 (6)			
71·4			
4·6			
1·9			
1·3	1·4	1·5	1·8
4·5			
High volatile A bituminous 168—Parabituminous			
57·0	55·4	44·8	52·8
35·1	36·1	44·6	37·9
69·0			71·0

ANALYSES OF ASH— (Acadia (Albion))

	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

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—

* McGregor seam: 18 ft; Acadia No. 1: approx. 6 ft. 9 in.

(1) Mine run prepared for railway use is crushed to pass a 6" screen. (2) Stove: 1¾" x 4", and Nut ⅞" sq. x 1½" rd. are prepared at times. No samples received at F.R.L The analysis was calculated from results of P. & C. survey samples. (3) All seams at this mine show a negative swelling index. (4) Albion and McGregor mines have one common tipple. (5) Lump = +1¾", +2½" or 4", etc. Stove = 1¾" x 5" sq. Nut = ⅞" x 1½" sq. (6) The value for the swelling index is for an average of all the seams, the different seams varying from an index of −237 to +438. (7) McBean Colliery is at Thorburn (no separate samples received). (8) Acadia No. 7 closed in 1947. (9) Allan mine closed in 1951. (10) Practically all the +¼" coal is washed at a central wet washing plant situated at the Allan shaft.

Province	NOVA SCOTIA
Area	**Westville (Pictou County)**
Operator	INTERCOLONIAL COAL CO. LTD.
Mine	DRUMMOND NOS. 1, 2, & 5 (1)
Trade name	**DRUMMOND**
Output.....approx. tons/annum	165-250,000
Location of Mine	Westville
Seam	Main (No. 1 & No. 5), Second or Scott (No. 2)

	Mine Run (2)	Screened Lump (4)	Slack (2)(3)
Size		+1 sq., +1¼, +1½	0 x 1 sq.
Screen limits at mine.....in.			
No. of samples	12	27	18
CHEMICAL PROPERTIES—			
Proximate Analysis (As received)—			
Moisture.....%	2·1	2·0	5·5
Ash.....%	19·7	20·5	17·9
Volatile matter.....%	24·3	23·9	24·9
Fixed carbon.....%	53·9	53·6	51·7
Calorific value (As received).....B.t.u./lb.	11,840	11,620	11,295
Ash softening temperature.....°F.	2435	2505	2300
Caking Properties—			
Volatile matter residue—950°C	Fair	Fair	Poor
Caking index (Gray)	43 (5)		
Swelling Properties—			
Swelling index (A.S.T.M.)	1-4		
Swelling index (F.R.L.)	219 (5)		
Ultimate Analysis (As received)—			
Carbon.....%	67·0		
Hydrogen.....%	4·2		
Nitrogen.....%	1·8		
Sulphur.....%	1·2	1·1	1·6
Oxygen.....%	4·0		
Classification by Rank—			
A.S.T.M	Medium volatile bituminous		
S.V.I	173—Parabituminous		
PHYSICAL PROPERTIES—			
Bulk density.....lb./cu. ft.	60·0	50·0	56·5
cu. ft./ton	33·3	40·0	35·4
Grindability index	80·0	83·0	76·0

ANALYSES OF ASH— (Drummond)

	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) No. 5 mine not producing since 1946. Mine as a whole temporarily closed in late 1953.

(2) This coal is a mixture of Main seam and Second seam.

(3) Special stoker slack was at times prepared from Main seam only (No. 1 & No. 5 mines). This coal usually contained about 2% less ash than the mixed slack.

(4) This coal was from Main seam only. (No. 1 & No. 5 mines, but mainly No. 1.)

(5) The swelling indices and caking indices of the two seams vary to some extent as follows:

	Swelling Index (F.R.L.)	Caking Index
Main seam	477	49
Scott seam	—40	36

NOVA SCOTIA
Thorburn (Pictou County)

GREENWOOD COAL CO., LTD.
MILFORD No. 2 (1)
MILFORD or GREENWOOD
35-50,000
Coalburn
Captain*

Mine Run (2)	Screened Lump	Slack
	$\frac{7}{8}$ or $1\frac{1}{4}$ sq. x 7	0 x $\frac{7}{8}$ or $1\frac{1}{4}$ sq.
3	8	5
5·0	5·0	6·5
18·4	16·4	25·0
27·6	27·9	24·8
49·0	50·7	43·7
11,130	11,450	9,810
2120	2090	2115
Poor	Poor	Poor
12		
0		
−204 (contracting)		
64·0		
4·3		
1·7		
3·1	3·1	3·3
3·5		
	High volatile A bituminous 159—Parabituminous	
53·5	47·0	56·5
37·4	42·6	35·4
62·0		63·0

ANALYSES OF ASH— (Milford or Greenwood)

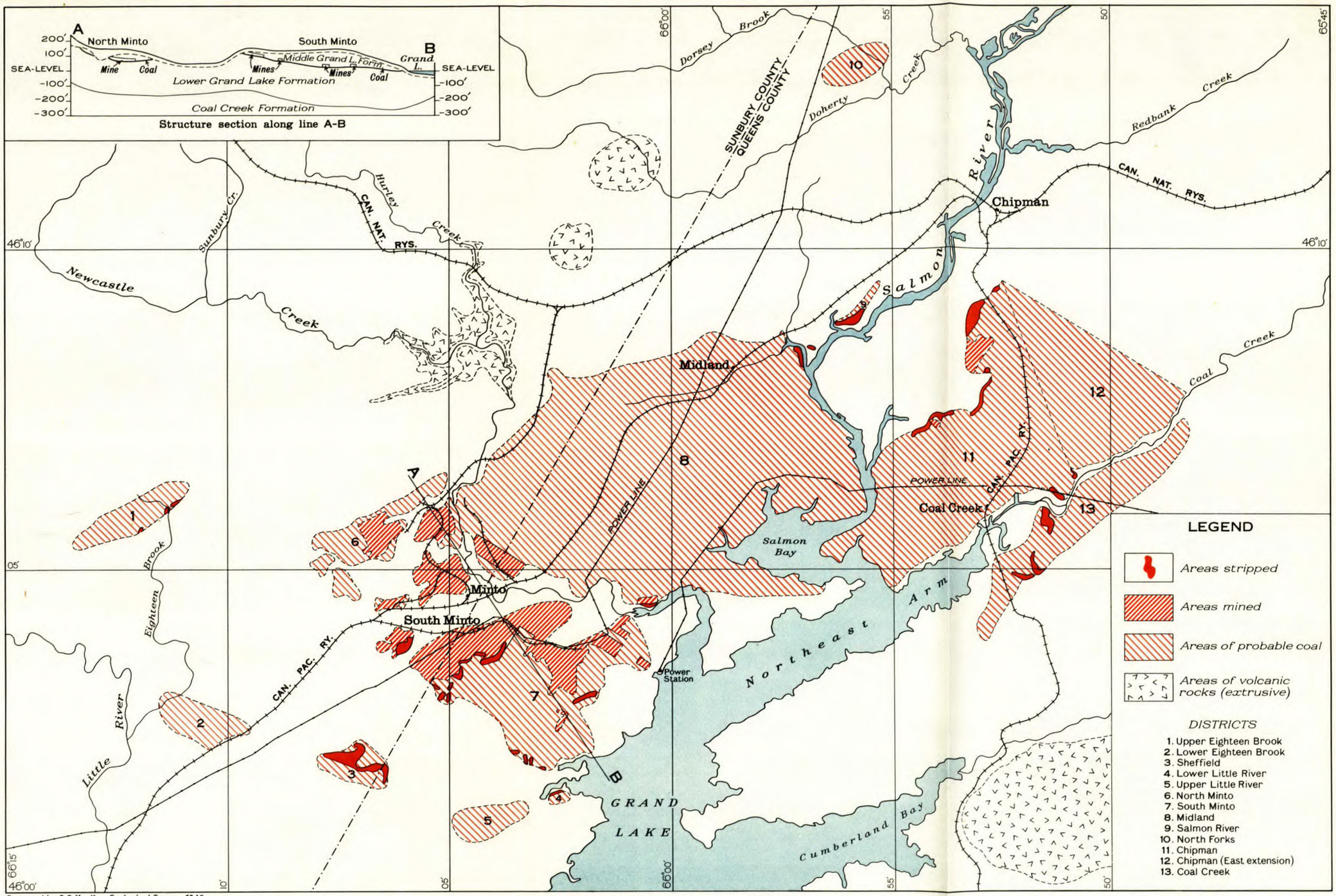
	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	53·5	26·7	6·4	4·6	1·4	0·04	1·3	2·6	0·08	0·7	2·8

REMARKS—

(1) Milford No. 2 mine was opened in the spring of 1941, and is the successor to the Milford No. 1 mine which operated on the MacKay seam. The latter mine was closed down early in 1941. Milford No. 2 mine closed in 1947. Replaced in 1948 by Greenwood No. 2 mine operating on the MacKay seam, with output up to 20,000 tons per annum. No samples from this new mine, but analyses should be comparable to above.

(2) Railway mine run is crushed to pass a 5″ screen, whereas commercial mine run is crushed to pass a 7″ screen.

* Approx. 3 ft. thick.



Prepared by B.R.MacKay, Geological Survey, 1946.
Based on G.S.C. maps and reports, and data supplied by the Department of Lands and Mines, New Brunswick.

MINTO COALFIELD

(GRAND LAKE COAL BASIN)

NEW BRUNSWICK

SCALE OF MILES

1 0 1 2 3 4 5

Province	NEW BRUNSWICK
Area	**Minto**
Operator	GENERAL
Mine	AS LISTED
Trade name	
Output.....approx. tons/annum	500-750,000
Location of Mine	In Vicinity of Minto and Chipman
Seam	Main

Size	Mine Run Regular	Mine Run "Soft"	Mine Run Strip	Lump	Slack
Screen limits at mine.....in.	(1)	(2)		$+\frac{5}{8}$ or $+1\frac{1}{4}$ sq.	0 x $\frac{5}{8}$ or $1\frac{1}{4}$ sq.
No. of samples	129	7	38	31	37
CHEMICAL PROPERTIES—					
Proximate Analysis (As received)—					
Moisture.....%	3·2	10·5	3·4	2·0	5·0
Ash.....%	19·3	6·8	16·8	18·0	20·6
Volatile matter.....%	29·7	29·6	30·5	30·8	29·0
Fixed carbon.....%	47·8	53·1	49·3	49·2	45·4
Calorific value (As received).....B.t.u./lb.	11,610	12,075	11,715	11,960	11,025
Ash softening temperature.....°F.	2030	2280	1985	2015	2100
Caking Properties—					
Volatile matter residue—950°C	Good	Poor	Good	Good	Good
Caking index (Gray)	55	35	55		
Swelling Properties—					
Swelling index (A.S.T.M.)	5-6	0	5-6	5-6	5-6
Swelling index (F.R.L.)	484	−168	431		
Ultimate Analysis (As received)—					
Carbon.....%	62·7	68·4	65·0		
Hydrogen.....%	4·1	4·4	4·4		
Nitrogen.....%	0·8	0·9	0·9		
Sulphur.....%	7·6	2·6	7·8	7·6	7·5
Oxygen.....%	2·3	6·4	1·7		
Classification by Rank—					
A.S.T.M.		High volatile A bituminous			
S.V.I.	179 (3)	154 (4)			
PHYSICAL PROPERTIES—					
Bulk density.....lb./cu. ft.	57·5	43·5	57·0	52·0	56·0
cu. ft./ton	34·8	46·0	35·1	38·5	35·7
Grindability index	71·0	89·0	71·0		78·0

REMARKS—

(1) Mainly from underground mines.

(2) "Soft Coal"—This is coal which has been weathered and oxidized *in situ* due to thinness and permeable nature of cover.

(3) Orthobituminous (regular "hard" coal).

(4) Subbituminous C—on border of parabituminous D (rank depressed because of oxidation).

Province	NEW BRUNSWICK
Area	**Minto (North Area)**
Operator	H. F. Banks Coal Co. (1)
Mine	Banks
Trade name	**BANKS**
Output.....approx. tons/annum	
Location of Mine	Newcastle Creek (2½ miles E. of Minto)
Seam	Main (Approx. 22 in.)
Size	Mine Run
Screen limits at mine.....in.	
No. of samples	1
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	3·0
Ash.....%	21·3
Volatile matter.....%	28·9
Fixed carbon.....%	46·8
Calorific value (As received).....B.t.u./lb.	11,280
Ash softening temperature.....°F.	2040
Caking Properties—	
Volatile matter residue—950°C	Good
Caking index (Gray)	
Swelling Properties—	
Swelling index (A.S.T.M.)	
Swelling index (F.R.L.)	
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	7·7
Oxygen.....%	
Classification by Rank—	
A.S.T.M.	High volatile A bituminous
S.V.I.	179—Orthobituminous
Physical Properties—	
Bulk density.....lb./cu. ft.	59·5
cu. ft./ton	33·6
Grindability index	

Remarks—

(1) Not listed since 1943 (part of lease No. 179).

NEW BRUNSWICK **Minto (North Area)** MILLS REG'D., D. W. & R. A. MILLS, LEASE NO. 215 (STRIP PITS) (1) **MILLS** 50-70,000 Near Minto Main		NEW BRUNSWICK **Minto (North Area)** MIRAMICHI LUMBER CO. LTD. STRIP AND SHAFT MINES ON LEASES NOS. 171, 172, 209 AND 220 (2) **MINTO; XLO COAL; NORTHFIELD; MIRAMICHI** 200-250,000 North Minto Main (14–28 in.)		
Lump	Slack	Mine Run	Lump	Slack
+ 1¼	0 x 1¼		+ ¾, + 1¼	0 x ¾, or 1¼
1	1	22	16	27
3·0	5·0	3·0	2·0	5·0
16·5	17·9	18·6	17·3	21·0
32·1	30·9	30·1	31·0	28·6
48·4	42·2	48·3	49·7	45·4
12,180	11,565	11,830	12,165	11,045
1980	2030	2030	2040	2015
Fair	Fair	Good	Good	Fair
		49		
	5·5	5–7		
	485	507		
		64·3		
		4·2		
		0·7		
6·7	7·1	6·7	7·1	6·6
		2·5		
High volatile A bituminous Orthobituminous		High volatile A bituminous 180—Orthobituminous		
50·5	53·0	58·5	55·9	55·1
39·6	37·7	34·2	35·8	36·3
71·9	76·8	77·0	75·7	76·6

ANALYSES OF ASH (3)— (Minto; XLO Coal; Northfield; Miramichi)

	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) Listed in 1952 as operating on Crown lease No. 222.

(2) Mines on lease No. 172 were, until 1946, operated by The Minto Coal Co. Ltd. This company's operations were taken over by the Miramichi Lumber Co. Ltd., who were and still are operating on leases Nos. 171 and 209. Some of the old pits such as West Slope and 2C were closed down, whereas new shafts were opened, and fairly large strip operations were continued and begun. As the coal all comes from the same single thin seam, all the analyses for The Minto Coal Co. Ltd. and the Miramichi Lumber Co. Ltd. have been combined. The company has sub-contracts with the Minto Construction Co. Ltd. for strip coal on lease No. 172.

(3) On mine run samples only.

Province	NEW BRUNSWICK
Area	**Minto (South Area)**
Operator	Avon Coal Co., Ltd.
Mine	Stripping Pits (Lease Nos. 162, 206, 179, 214) (1)
Trade name	**AVON (MINTO); WINTERPORT**
Output ..... approx. tons/annum	50-95,000
Location of Mine	South of Minto, near Rothwell
Seam	Main (19 to 24 in.)

Size	Mine Run	Lump	Slack
Screen limits at mine ..... in.		$+\frac{5}{8}$, $+1\frac{1}{4}$	0 x $\frac{5}{8}$, $1\frac{1}{4}$ sq.
No. of samples	8	8	12
Chemical Properties—			
Proximate Analysis (As received)—			
Moisture ..... %	3·0	2·0	5·0
Ash ..... %	17·6	16·5	17·9
Volatile matter ..... %	29·8	30·7	29·4
Fixed carbon ..... %	49·6	50·8	47·7
Calorific value (As received) ..... B.t.u./lb.	11,810	12,105	11,360
Ash softening temperature ..... °F.	1990	2015	2030
Caking Properties—			
Volatile matter residue—950°C	Good	Good	Good
Caking index (Gray)	54		
Swelling Properties—			
Swelling index (A.S.T.M.)		5-6	
Swelling index (F.R.L.)	550		
Ultimate Analysis (As received)—			
Carbon ..... %	64·8		
Hydrogen ..... %	4·3		
Nitrogen ..... %	0·8		
Sulphur ..... %	7·9	7·7	7·9
Oxygen ..... %	1·6		
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	56·0	57·8
cu. ft./ton	33·1	35·7	34·6
Grindability index	79·0	76·0	82·0

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.

NEW BRUNSWICK **Minto (South Area)** CRAWFORD, E. S. AND SON THUROTT LEASE No. 166* **CRAWFORD** 5-9,000 2½ miles E. of Minto, on Lake Road Main (18 to 20 in.)					NEW BRUNSWICK **Minto (South Area)** H. L. FLOWER (5) LEASE No. 197 **MINTO** Flower's Cove, S. of Minto Main (about 20 in.)
Mine Run (1)	Lump (1) +1¼ sq.	Nut (1) ⅝ x 1¼ sq.	Slack (1) 0 x ⅝ sq.	Mine Run (2)	Mine Run (6)
1	1	1	1	1	1
3·5	2·5	3·0	5·0	15·0	3·5
20·5	19·9	19·6	18·1	5·8	21·4
29·6	29·4	29·8	29·5	27·6	29·8
46·4	48·2	47·6	47·4	51·6	45·3
11,170	11,330	11,400	11,380	11,560	11,005
2150	2020	2030	2000	2340	2050
Good	Good	Good	Good	Poor	Good
9·7	9·9	9·0	8·2	1·7	10·9
175 (3)	High volatile A bituminous			152 (4)	High volatile A bituminous 177—Orthobituminous
62·0	53·5	51·0	53·0	46·0	60·5
32·2	37·4	39·2	37·7	43·4	33·0

REMARKS—

(1) Crawford Shaft mine—normal coal.
(2) Crawford Slope mine—this is so-called "soft coal", i.e. weathered in the seam.
(3) Border of ortho and parabituminous.
(4) Subbituminous C—border of parabituminous D ("soft coal").
(5) Not listed since 1946. Intermittent operation on same lease by B. B. Flower until 1950.
(6) P. & C. Survey—Analysis typical of coal in this area.
* Shaft and slope mines closed—converted to strip operations.

Province	NEW BRUNSWICK
Area	**Minto (South Area)**
Operator	KING MINING CO. LTD. (1)
Mine	ON CROWN LEASE No. 219
Trade name	**KING**
Output.....approx. tons/annum	50-60,000
Location of Mine	4 mi. S. W. of Minto
Seam	Main (19 in.)

Size	Lump	Slack
Screen limits at mine.....in.	+1¼	0 x 1¼
No. of samples	1	1
CHEMICAL PROPERTIES—		
Proximate Analysis (As received)—		
Moisture.....%	2·0	5·0
Ash.....%	13·8	15·3
Volatile matter.....%	32·3	30·7
Fixed carbon.....%	51·9	49·0
Calorific value (As received).....B.t.u./lb.	12,610	11,980
Ash softening temperature.....°F.	2060	2020
Caking Properties—		
Volatile matter residue—950°C.	Good	Good
Caking index (Gray)		
Swelling Properties—		
Swelling index (A.S.T.M.)		
Swelling index (F.R.L.)	5·0	5·5
Ultimate Analysis (As received)—		
Carbon.....%		
Hydrogen.....%		
Nitrogen.....%		
Sulphur.....%	6·7	6·8
Oxygen.....%		
Classification by Rank—		
A.S.T.M.	High volatile A bituminous	
S.V.I.		
PHYSICAL PROPERTIES—		
Bulk density.....lb./cu. ft.	45·0	54·0
cu. ft./ton	44·4	37·0
Grindability index	76·8	96·5

REMARKS—

(1) Started strip operation in 1948.

NEW BRUNSWICK **Minto (South Area)** MIRAMICHI LUMBER CO., LTD. STRIP (1) **MINTO; XLO COAL; MIRAMICHI** (2) South Minto, near Rothwell Main (Approx. 20 in.)			NEW BRUNSWICK **Minto (South Area)** MCMANN, H. H.—MACDONALD J. F. (3) ROTHWELL LEASE—LAKE ROAD (LEASE No. 176) 2½ mi. E. of Minto on Lake Road, Newcastle Creek. Main	
Mine Run	Lump +⅝, +1½ sq.	Slack 0 x ⅝, or 1½ sq.	Mine Run (McMann)	Mine Run (MacDonald)
17	4	5	1	1
3·0	2·0	5·0	3·0	3·0
17·2	14·7	17·4	17·2	20·9
30·0	31·0	29·1	30·1	28·4
49·8	52·3	48·5	49·7	47·7
11,860	12,450	11,480	11,865	11,170
2035	2050	2055	2040	2060
Good	Good	Good	Good	Good
60				
4-6				
362				
64·5				
4·2				
0·8				
8·3	7·6	7·3	8·7	8·7
2·0				
High volatile A bituminous 174—Parabituminous			High volatile A bituminous 173—Parabituminous E	
56·0	50·0	55·0	58·0	60·0
35·7	40·0	36·4	34·5	33·3
74·0		81·0		

ANALYSES OF ASH— (Minto; XLO Coal; Miramichi)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	24·2	8·0	61·1	2·3	0·3	0·09	—	0·8	0·8	0·6	1·6

REMARKS—

(1) Mostly stripping since 1941 (formerly Tweedie mines).
(2) Output included with Miramichi Lumber Co., Ltd., North Area.
(3) McMann still operating in 1952, but MacDonald not operating since 1942.

Province	NEW BRUNSWICK
Area	**Minto (South Area)**
Operator	WASSON, A. W. LTD. (1)
Mine	STRIP PITS AND UNDERGROUND MINE ON LEASES NOS. 199, 212 AND 218
Trade name	**ROTHWELL**
Output.....approx. tons/annum	50-70,000
Location of Mine	Near Rothwell, South of Minto
Seam	Main

Size	Mine Run (2)	Mine Run (3) (Soft coal)
Screen limits at mine.....in.		
No. of samples	22	1
CHEMICAL PROPERTIES—		
Proximate Analysis (As received)—		
Moisture.....%	3·0	5·0
Ash.....%	17·3	12·7
Volatile matter.....%	31·0	33·0
Fixed carbon.....%	48·7	49·3
Calorific value (As received).....B.t.u./lb.	11,960	12,460
Ash softening temperature.....°F.	2015	2100
Caking Properties—		
Volatile matter residue—950°C	Good	Good
Caking index (Gray)	62	
Swelling Properties—		
Swelling index (A.S.T.M.)	6·5	6·5
Swelling index (F.R.L.)	404	
Ultimate Analysis (As received)—		
Carbon.....%	65·1	
Hydrogen.....%	4·4	
Nitrogen.....%	0·8	
Sulphur.....%	7·2	6·5
Oxygen.....%	2·2	
Classification by Rank—		
A.S.T.M	High volatile A bituminous	
S.V.I	177—Orthobituminous	
PHYSICAL PROPERTIES—		
Bulk density.....lb./cu. ft.	57·0	51·0
cu. ft./ton	35·1	39·2
Grindability index	73·0	75·0

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	5·4	57·2	3·7	0·3	0·2	—	0·9	0·9	0·6	3·7

REMARKS—

(1) Successor to W. B. Evans (Rothwell Coal Co.).

(2) These include analyses of the old underground mine up to 1942.

(3) Strip coal from Crown lease No. 218—somewhat oxidized coal.

NEW BRUNSWICK
Minto (South Area)

WELTON LTD., HARVEY (1)
WELTON (LEASE No. 181)

WELTON
5-10,000
Newcastle Creek, ¾ mi. from power plant
Main

NEW BRUNSWICK
Minto (South Area)

WELTON & HENDERSON LTD.
KELLY (LEASE NOS. 179, 181 and 182) (4)

KELLY; BLACK DIAMOND
30-45,000
Rothwell, 1½ mi. S.E. of Minto
Main

Mine Run (2)	Lump	Slack (3)	Mine Run	Lump	Slack
	+¾ sq.	0 x ¾ sq.		+⅝, 1¼ sq.	0 x ⅝, 1¼ sq.
2	2	2	72	4	1
3·5	2·0	5·0	3·5	2·0	5·7
17·9	15·7	17·9	19·6	19·6	25·8
29·6	30·7	29·5	29·9	30·5	27·2
49·0	51·6	47·6	47·0	47·9	41·3
11,735	12,350	11,345	11,590	11,745	9,980
1990	1995	2005	2030	1985	2000
Good	Good	Good	Good	Good	Good
50			59		
4-6			4-6		
390			462		
63·7			63·4		
4·4			4·1		
0·9			0·8		
7·9	6·8	7·1	6·7	7·0	8·1
1·7			1·9		
High volatile A bituminous 177—Orthobituminous			High volatile A bituminous 180—Orthobituminous		
58·0	50·0	54·5	60·0	53·0	58·5
34·5	40·0	36·8	33·3	37·7	34·2
69·0		78·0	65·0	72·0	69·0

ANALYSES OF ASH— (Welton)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	31·5	20·9	39·2	3·5	0·6	0·15	—	0·6	0·9	0·8	2·2

ANALYSES OF ASH— (Kelly; Black Diamond)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	30·4	17·8	41·9	3·7	0·6	0·18	0·2	1·0	1·2	0·7	2·7

REMARKS—

(1) Not listed since 1946.
(2) From P. & C. Survey 1938.
(3) P. & C. Survey and tipple samples.
(4) The Black Diamond mines situated in the Newcastle Bridge area have been closed down for several years and the output is now entirely from the Kelly mines. The mine run analysis contains a large proportion of Black Diamond mine samples, which have been included because they do not vary from the more recent Kelly mine samples.

Province	NEW BRUNSWICK
Area	**Minto (South Area)**
Operator	YEAMANS, ROY (1)
Mine	LAKE ROAD NO. 2 (LEASE NOS. 601, 602)
Trade name	**YEAMANS**
Output.....approx. tons/annum	3-10,000
Location of Mine	Newcastle Bridge, 1½ mi. S.E. of Minto
Seam	Main

Size	Mine Run (2)	Lump	Nut	Slack
Screen limits at mine.....in.		+⅝, 1¼ sq.	⅝ x 1¼ sq.	0 x ⅝, 1¼ sq.
No. of samples	2	2	1	1
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	3·5	2·0	2·5	5·0
Ash.....%	17·4	15·8	19·2	19·7
Volatile matter.....%	26·8	31·7	30·3	29·5
Fixed carbon.....%	52·3	50·5	48·0	45·8
Calorific value (As received).....B.t.u./lb.	12,230	12,340	11,750	11,250
Ash softening temperature.....°F.	2005	1995	2040	2035
Caking Properties—				
Volatile matter residue—950°C	Good	Good	Good	Good
Caking index (Gray)	57			
Swelling Properties—				
Swelling index (A.S.T.M.)	4-6			
Swelling index (F.R.L.)	438			
Ultimate Analysis (As received)—				
Carbon.....%	65·4			
Hydrogen.....%	4·4			
Nitrogen.....%	0·9			
Sulphur.....%	7·0	7·5	7·2	7·1
Oxygen.....%	1·4			
Classification by Rank—				
A.S.T.M	High volatile A bituminous			
S.V.I	182—Orthobituminous			
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	56·0	52·0	51·0	59·0
cu. ft./ton	35·7	38·5	39·2	33·9
Grindability index	70·0			75·0

ANALYSES OF ASH— (Yeamans)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	27·8	24·2	36·1	4·5	0·3	0·3	1·4	0·8	0·5	1·2	3·3

REMARKS—

(1) Successor to C. S. Yeamans. Not listed in 1953.

(2) Calculated analysis—from 60% lump and 40% slack.

NEW BRUNSWICK **Minto (Newcastle Bridge Area)**			NEW BRUNSWICK **Minto (Chipman Area)**
Newcastle Coal Co. Ltd. (1) Shaft No. 3 (Lease No. 191.)			Horgan, F. J. (Contractor) Lockowan, Copeland & Mills Leases, Stripping (2)
NEWCASTLE			**HORGAN**
50-60,000			Up to 7,000
Newcastle Bridge, 2 mi. N.E. of Minto			Salmon Harbour & Coal Creek
Main (Approx. 22 in.)			Main (About 18 in.)
Mine Run	Lump + 1½ sq.	Slack 0 x 1½ sq.	Mine Run
12	2	2	1
3·5	2·5	5·0	4·2
17·2	17·2	21·1	15·9
30·5	31·3	29·4	30·4
48·8	49·0	44·5	49·5
11,930	12,055	11,000	11,960
1995	2010	2080	1980
Good	Good	Good	Good
49			
5-6	5-6	5-6	
511			
64·9			
4·2			
0·9			
6·8	6·7	6·4	7·5
2·5			
High volatile A bituminous 177—Orthobituminous			High volatile A bituminous 176—Orthobituminous
55·5	51·3	58·0	52·5
36·0	39·0	34·5	38·1
64·0	73·0	71·4	

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) Underground mine.

(2) From 1943 stripping had been conducted on Copeland & Mills leases. Operations on these leases terminated in 1946.

Province	NEW BRUNSWICK
Area	**Minto (Chipman Area)**
Operator	King, G. H.
Mine	Elkin Shaft (Lease No. 179) (1)
Trade name	
Output.....approx. tons/annum	22-24,000
Location of Mine	Four miles S. of Chipman
Seam	Main

Size	Mine Run	Lump	Nut	Slack
Screen limits at mine.....in.		+ 1¼ sq.	⅝ x 1¼ sq.	0 x ⅝, 1¼ sq.
No. of samples	21	3	2	3
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	2·8	1·5	2·0	5·0
Ash.....%	23·4	18·6	18·6	20·3
Volatile matter.....%	30·9	33·3	33·2	31·2
Fixed carbon.....%	42·9	46·6	46·2	43·5
Calorific value (As received).....B.t.u./lb.	11,060	12,075	11,860	11,270
Ash softening temperature.....°F.	2040	1965	2060	1990
Caking Properties—				
Volatile matter residue—950°C	Good	Good	Good	Fair
Caking index (Gray)	60			
Swelling Properties—				
Swelling index (A.S.T.M.)	5-6			
Swelling index (F.R.L.)	485			
Ultimate Analysis (As received)—				
Carbon.....%	60·2			
Hydrogen.....%	4·2			
Nitrogen.....%	0·9			
Sulphur.....%	6·4	6·5	6·1	6·2
Oxygen.....%	2·1			
Classification by Rank—				
A.S.T.M	High volatile A bituminous			
S.V.I.	177—Orthobituminous			
Physical Properties—				
Bulk density.....lb./cu. ft.	54·0	48·0	46·0	54·5
cu. ft./ton	37·1	41·7	43·5	36·8
Grindability index	64·0			76·0

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
%	37·7	25·5	26·8	4·2	0·8	0·2	0·3	1·4	0·5	0·9	2·3

Remarks—

(1) Strip mining conducted on this property from 1943 to 1947, when operations ended.

NEW BRUNSWICK
Minto (Chipman Area)

WASSON, W. M., AND MITCHELL, P.D. (1)
CROWN LEASES NOS. 402-411
WASSON'S
5-8,000
South of Chipman near Coal Creek
Main

NEW BRUNSWICK
Beersville (Kent County)

GIRVAN, GLENCROSS, REID
GIRVAN, GLENCROSS, REID (4)
GLENCROSS; GIRVAN; REID

Beersville, Jailletville
Main

Mine Run ("hard")	Lump ("hard") + 1¼ sq.	Slack ("soft") 0 x 1¼ sq.	Mine Run ("soft")	Mine Run (5)	Lump (6) + 1 sq.	Slack (6) 0 x 1 sq.
2	1	2	3	1	3	3
3·0	2·0	5·0	10·0	4·3	4·4	4·2
19·9	18·9	19·4	8·7	14·8	15·0	21·9
30·7	32·3	30·7	29·3	32·5	32·8	30·2
46·4	46·8	44·9	52·0	48·4	47·8	43·7
11,250	11,620	10,995	11,845	11,705	11,725	10,695
2025	1980	1990	2100	2230	2110	2130
Good	Good	Good	Fair	Fair to Good		Poor to Fair
54			34			
				4·2		
374			140			
60·6			67·3	64·8		
3·9			4·5	4·2		
0·8			0·9	0·8		
10·3	9·2	10·3	3·9	5·8	6·0	5·5
1·5			4·7	5·3		
High volatile A bituminous 164—Parabituminous D			155(3)	High volatile A bituminous 157—Subbituminous C		
49·8	53·0	57·5	45·8	53·0	49·0	49·0
40·2	37·7	34·8	43·7	37·7	40·8	40·8
67·0		79·0	89·0			

ANALYSES OF ASH—(2) (Wasson's)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	27·3	26·8	39·5	2·8	0·2	0·03	0·1	0·6	0·8	0·4	1·9

REMARKS—

(1) Previously listed in 1947 as Parker D. Mitchell, successor to Pennlyn Coal Co. Strip operations started again in 1952.

(2) Ash analyses of the normal "hard" coal.

(3) Subbituminous C (depressed rank due to oxidation).

(4) Girvan, H. H. (lease No. 203)—Jailletville (on Coal Branch River); Glencross, Wm. Irving (lease No. 188)—Beersville (on Coal Branch River); Reid, Thos. (lease No. 168)—Beersville (on Coal Branch River). All the above mines were last listed in 1947, having only operated intermittently for several years.

(5) Girvan coal.

(6) Average of all three mines.

Province	ONTARIO
Area	**Onakawana**
Operator	ONTARIO DEPARTMENT OF MINES
Mine	STRIP MINES
Trade name	**ONAKAWANA LIGHNITE**
Output.....approx. tons/annum	(1)
Location of Mine	Onakawana, West side of Abitibi River, 126 miles N. of Cochrane on the Ontario Northland Rlwy.
Seam	
Size	Mine Run
Screen limits at mine.....in.	
No. of samples	35
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	50·0
Ash.....%	6·3
Volatile matter.....%	21·3
Fixed carbon.....%	22·4
Calorific value (As received).....B.t.u./lb.	5,090
Ash softening temperature.....°F.	2200
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
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·7
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	
B.t.u./lb.....(capacity moisture basis)	
Classification by Rank—	
A.S.T.M.	Lignitic
S.V.I.	88—Lignite (unconsolidated)

REMARKS—

(1) No operations since 1947. During 1946 operations were confined to stripping an area capable of producing up to 25,000 tons of raw lignite during winter of 1946-47, but only 2 carloads of run-of-mine raw lignite were shipped.

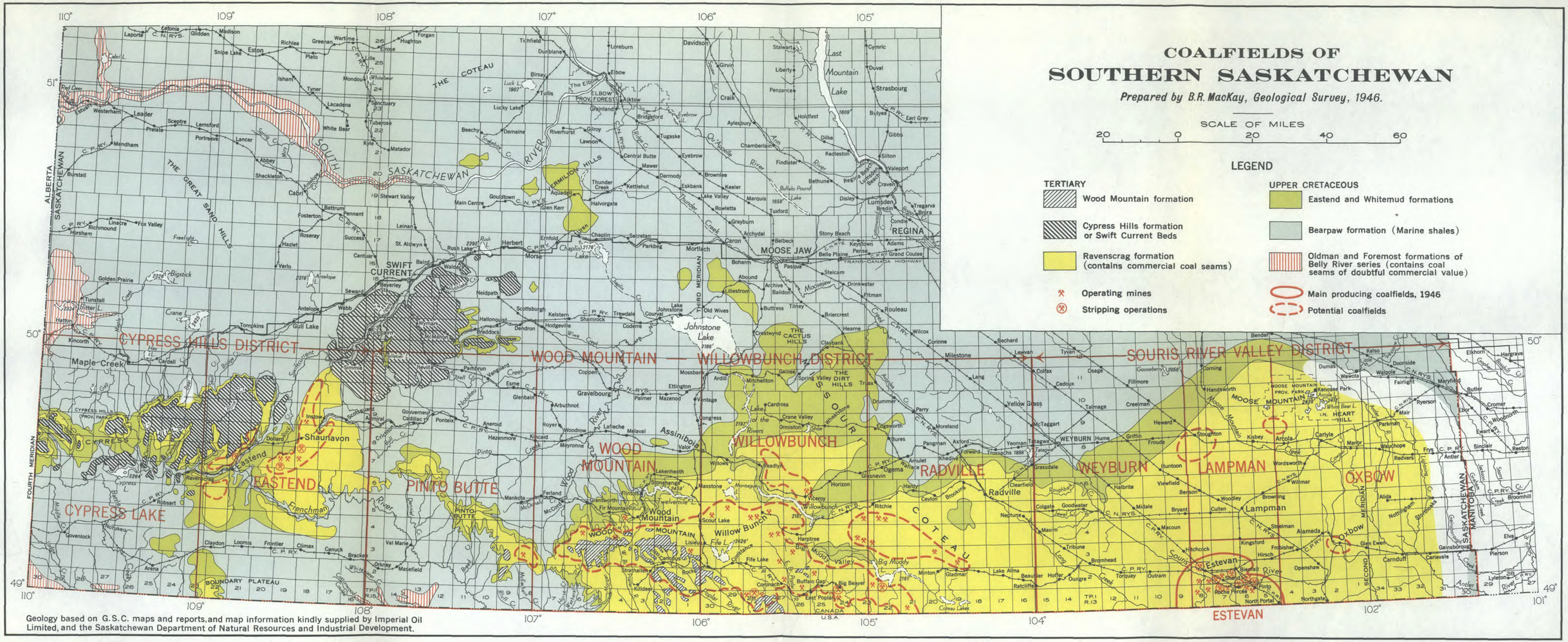
Province	MANITOBA
Area	**Turtle Mountain**
Operator	GENERAL (1)
Mine	
Trade name	
Output.....approx. tons/annum	
Location of Mine	Tp. 1, R. 24, W. of 1st., Near Goodlands, Man. (2)
Seam	
Size	Mine Run
Screen limits at mine.....in.	
No. of samples	3
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	31·7
Ash.....%	7·5
Volatile matter.....%	26·9
Fixed carbon.....%	33·9
Calorific value (As received).....B.t.u./lb.	6,995
Ash softening temperature.....°F.	
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
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·5
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	33·0 (3)
B.t.u./lb.....(capacity moisture basis)	6,860
Classification by Rank—	
A.S.T.M.	Lignitic
S.V.I.	79—Border of Lignite and Peat

REMARKS—

(1) Area last listed in 1944, with one operator: Cain, Geo. E.—Henderson mine—Tp. 1, R. 24, W. of 1st.

(2) Some mining has also been conducted in the Duck Mountain district (Tp. 33, R. 22, W. of 1st.), but no analyses are available.

(3) May be somewhat low.



Geology based on G.S.C. maps and reports, and map information kindly supplied by Imperial Oil Limited, and the Saskatchewan Department of Natural Resources and Industrial Development.

Province	SASKATCHEWAN
Area	**Souris (Bienfait Division)**
Operator	GENERAL
Mine	(1)
Trade name	
Output.....approx. tons/annum	1,500,000–1,800,000 (2)
Location of Mine	Tps. 1 and 2; R. 6 and 7; W. of 2nd
Seam	Upper (No. 2, No. 3); Deep (No. 4)

Size	Lump and Cobble	Stove	Nut and Stoker (3)	Bug Dust
Screen limits at mine.....in.	+8, 4 x 8 rd.	2 x 4 rd.	½ x 1½, 2	0 x ½ sq.
No. of samples	40	23	34	9
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	31·0	30·0	29·5	28·5
Ash.....%	6·1	6·5	7·3	9·4
Volatile matter.....%	28·2	27·6	28·5	25·5
Fixed carbon.....%	34·7	35·9	34·7	36·6
Calorific value (As received).....B.t.u./lb.	7,820	7,920	7,940	7,700
Ash softening temperature.....°F.	2185	2270	2230	2195
Caking Properties—				
Volatile matter residue—950°C		Non-agglomerate		
Caking index (Gray)		0		
Swelling Properties—				
Swelling index (A.S.T.M.)		Non-caking		
Swelling index (F.R.L.)				
Ultimate Analysis (As received)—				
Carbon.....%	46·2			
Hydrogen.....%	3·1			
Nitrogen.....%	0·7			
Sulphur.....%	0·5	0·5	0·5	0·5
Oxygen.....%	12·4			
Analyses for Classification—				
Capacity moisture.....%	33·0	33·0	33·0	33·0
B.t.u./lb.....(capacity moisture basis)	7,590	7,580	7,550	7,220
Classification by Rank—				
A.S.T.M		Lignite		
S.V.I		101—Black Lignite		
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	43·5	41·5	40·7	43·3
cu. ft./ton	46·0	48·2	49·1	46·6
Grindability index	59·1			66·5

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
%	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.
Eastern Collieries of Bienfait, Ltd.—Eastern mine.
Manitoba and Saskatchewan Coal Co., Ltd.—M. & S. mines.
Western Dominion Coal Mines Ltd.—W.D. mines (Klimax) and South Cambrian.

(2) Output for whole of Souris area varies from 1,500,000 to 2,300,000 tons/annum.

(3) ¼ in. or ½ in. sq. to 1½ in. or 2 in. rd.

Province	SASKATCHEWAN
Area	**Souris (Roche Percee Division)**
Operator	GENERAL
Mine	(1)
Trade name	
Output.....approx. tons/annum	300-400,000
Location of Mine	Tp. 1; R. 6 and 7; W. of 2nd.
Seam	Upper

Size	Lump and Cobble	Stove	Stoker Nut (2)	Bug Dust
Screen limits at mine.....in.	+8, 4 x 8 rd.	2 x 4 rd.	½ x 1, 2	0 x ½ sq.
No. of samples	6	4	9	2
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	31·0	30·0	29·5	28·5
Ash.....%	6·8	6·9	7·3	9·2
Volatile matter.....%	27·1	27·9	28·5	26·9
Fixed carbon.....%	35·1	35·2	34·7	35·4
Calorific value (As received).....B.t.u./lb.	7,775	7,965	7,950	7,820
Ash softening temperature.....°F.	2100	2180	2155	2140
Caking Properties—				
Volatile matter residue—950°C.....		Non-agglomerate		
Caking index (Gray).....		0		
Swelling Properties—				
Swelling index (A.S.T.M.).....				
Swelling index (F.R.L.).....		Non-caking		
Ultimate Analysis (As received)—				
Carbon.....%	46·5			
Hydrogen.....%	3·2			
Nitrogen.....%	0·8			
Sulphur.....%	0·5	0·5	0·5	0·5
Oxygen.....%	11·2			
Analyses for Classification—				
Capacity moisture.....%	33·5	33·5	33·5	33·5
B.t.u./lb.....(capacity moisture basis)	7,490	7,565	7,495	7,270
Classification by Rank—				
A.S.T.M.....		Lignite		
S.V.I.....		103—Black Lignite		
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	46·5	40·5	40·6	39·0
cu. ft./ton	43·0	49·4	49·6	51·3
Grindability index.....	53·2		54·6	

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.)—strip mine and main operator.
Zieglgansberger, F.—Golden Glow mine (not listed since 1943).
Several other mines operating in past.

(2) ¼ in. or ½ in. sq. to 1½ in. or 2 in. rd.

SASKATCHEWAN
Souris (Estevan Division)

GENERAL
(1)

60–80,000
Tp. 1 and 2; R. 7 and 8; W. of 2nd.

SASKATCHEWAN
Souris (Bienfait Division)

BANKS, HARRY
HARRY BANKS
HARRY BANKS
3–15,000
Taylorton—Sec. 31, Tp. 1, R. 6, W. of 2nd.

Lump, Cobble	Stove	Nut Stoker	Lump
+8rd,4x8rd.	2 x 4 rd.	½ x 2 rd.	
5	1	2	1
31·0	30·0	29·5	31·0
9·0	9·2	11·6	5·9
27·2	27·1	26·5	27·0
32·8	33·7	32·4	36·1
7,420	7,610	7,220	7,810
2145	2110	2125	2110
	Non-agglomerate 0		Non-agglomerate 0
	Non-caking		Non-caking
0·3	0·3	0·3	0·3
34·0	34·0	34·0	34·3
7,100	7,170	6,760	7,435
	Lignite 98—Lignite (2)		Lignite 95—Lignite (2)
41·0	42·5	41·3	
38·8	37·0	38·4	

REMARKS—

(1) Andersen, Niels—Andersen deep seam mine (not operating since 1949).
Jenish Bros.—Foord-Jenish mine (largest operator in district).
Bourguin & Sons, Geo.—Woodlawn (not operating in 1950).
Tisdale, A. E.—Tisdale mine (not operating since 1949).
Several other mines operating in the past.

(2) Border of brown and black lignite.

Province	SASKATCHEWAN
Area	**Souris (Bienfait Division)**
Operator	Eastern Collieries of Bienfait, Ltd. (1)
Mine	Eastern (Lease No. 7226) (2)
Trade name	**EASTERN "42"**
Output.....approx. tons/annum	100-150,000
Location of Mine	Bienfait—Sec. 13, Tp. 2, R.7, W. of 2nd
Seam	Upper

	Lump, Cobble	Stove	Stoker	Bug Dust
Size				
Screen limits at mine.....in.	+8 rd., 4 x 8 rd.	2 x 4 rd.	½ x 2 rd.	0 x ½ rd.
No. of samples	4	3	3	2
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	31·0	31·0	29·5	28·5
Ash.....%	5·3	5·5	6·7	7·7
Volatile matter.....%	28·5	28·6	28·6	28·4
Fixed carbon.....%	35·2	34·9	35·2	35·4
Calorific value (As received).....B.t.u./lb.	7,920	7,885	7,960	7,895
Ash softening temperature.....°F.	2390	2415	2315	2280
Caking Properties—				
Volatile matter residue—950°C	Non-agglomerate			
Caking index (Gray)	0			
Swelling Properties—				
Swelling index (A.S.T.M.)				
Swelling index (F.R.L.)	Non-caking			
Ultimate Analysis (As received)—				
Carbon.....%	47·2			
Hydrogen.....%	3·0			
Nitrogen.....%	0·8			
Sulphur.....%	0·5	0·5	0·5	0·7
Oxygen.....%	12·2			
Analyses for Classification—				
Capacity moisture.....%	34·3	34·3	34·3	34·3
B.t.u./lb.....(capacity moisture basis)	7,540	7,505	7,420	7,235
Classification by Rank—				
A.S.T.M	Lignite			
S.V.I	101—Black Lignite			
Physical Properties—				
Bulk density.....lb./cu. ft.	47·0	41·8	40·1	41·3
cu. ft./ton	42·5	47·9	49·9	48·5
Grindability index	51·8			59·8

Analyses of Ash— (Eastern "42")

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	19·3	11·9	6·7	25·4	7·2	0·03	9·4	1·1	0·5	0·3	18·5

Remarks—

(1) Not operating in 1952.

(2) Strip mine.

SASKATCHEWAN
Souris (Bienfait Division)

MANITOBA AND SASKATCHEWAN COAL CO. LIMITED
M. & S. MINES (LEASE No. 6218)
SILKSTONE; M & S; "SOO"

400-560,000
Taylorton—Secs. 10 & 2, Tp. 2, R. 6, W. of 2nd.
No. 4 Deep & Upper (1)

Lump and Cobble	Stove	Stoker, Nut	Slack (2)
+8 rd., 4 x 8 rd.	2 x 3, 4 rd.	¼, ½ x 1½, 2	0 x 1½ rd.
11	4	10	4
31·0	30·5	29·5	29·5
6·6	7·1	8·1	11·1
27·8	29·2	27·5	27·1
34·6	33·2	34·9	32·3
7,785	7,705	7,760	7,375
2115	2185	2140	2130
Non-agglomerate			
0			
Non-cak ng			
45·9			
3·2			
0·7			
0·5	0·4	0·5	0·5
12·1			
32·8	32·8	32·8	32·8
7,580	7,450	7,395	7,030
Lignite			
103—Black Lignite			
41·7	39·9	40·0	43·0
37·9	50·1	50·0	46·5
62·5			68·9

SASKATCHEWAN
Souris (Bienfait Division)

WESTERN DOMINION COAL MINES LTD. (3)
SOUTH CAMBRIAN (LEASE No. 6247)
PINTO; HIGHTEST; SOUTH CAMBRIAN
(4)

25-35,000
Pinto—Sec. 35, Tp. 1, R. 6, W. of 2nd.
No. 4 Deep

Lump	Stoker
+ 8 rd.	½ x 2 rd.
1	2
31·0	29·5
7·2	9·1
27·5	27·6
34·3	33·8
7,780	7,735
2090	2095
Non-agglomerate	
0	
Non-caking	
0·5	0·5
35·2	35·2
7,305	7,110
Lignite	
102—Black Lignite	
	41·0
	48·8

ANALYSES OF ASH— (Silkstone; M & S; "Soo")

	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 operating since 1943 in Upper seam. Deep mine closed down.
(2) Also "Bug Dust"—0 x ½ in. sq.
(3) Formerly South Cambrian Ltd., successor to Lignite Coal Mines Ltd.—strip pit. Not listed as South Cambrian Ltd. since 1949.
(4) Probably also marketed as "Klimax".

Province	SASKATCHEWAN
Area	**Souris (Bienfait Division)**
Operator	Western Dominion Coal Mines Ltd.
Mine	W.D.—Underground W.D.—Strip (1)
Trade name	**DOMINION; KLIMAX**
Output.....approx. tons/annum	800-1,100,000
Location of Mine	Taylorton—Sec. 5; Tp. 2; R. 6; W. of 2nd.
Seam	Deep (No. 4), Upper (No. 2 or 3).

	Lump	Cobble	Stove	Stoker (2)	Bug Dust
Size					
Screen limits at mine.....in.	+8 rd.	4 x 8 rd.	2 x 4 rd.	½ x 1, 2 rd.	0 x ½ sq.
No. of samples	6	17	17	26	3
Chemical Properties—					
Proximate Analysis (As received)—					
Moisture.....%	31·0	31·0	31·0	29·5	28·5
Ash.....%	6·3	5·7	6·4	6·8	8·4
Volatile matter.....%	27·9	28·6	28·0	28·3	28·0
Fixed carbon.....%	34·8	34·7	34·6	35·4	35·1
Calorific value (As received).....B.t.u./lb.	7,815	7,925	7,825	7,995	7,890
Ash softening temperature.....°F.	2280	2275	2275	2265	2225
Caking Properties—					
Volatile matter residue—950°C.	Non-agglomerate				
Caking index (Gray)	0				
Swelling Properties—					
Swelling index (A.S.T.M.)					
Swelling index (F.R.L.)	Non-caking				
Ultimate Analysis (As received)—					
Carbon.....%	46·3				
Hydrogen.....%	3·0				
Nitrogen.....%	0·6				
Sulphur.....%	0·5	0·5	0·5	0·5	0·5
Oxygen.....%	12·3				
Analyses for Classification—					
Capacity moisture.....%	33·6	33·6	33·6	33·6	33·6
B.t.u./lb.....(capacity moisture basis)	7,520	7,625	7,530	7,530	7,305
Classification by Rank—					
A.S.T.M.	Lignite				
S.V.I.	100—Black Lignite				
Physical Properties—					
Bulk density.....lb./cu. ft.	44·0	43·6	41·8	41·7	45·0
cu. ft./ton	45·5	45·9	47·8	48·0	44·4
Grindability index	57·7				68·4

Analyses of Ash— (Dominion; 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) Lease Nos. 6238, 7231, 7234, 7235, 6240, 6246. It should be noted that most of the coal mined by this company now comes from the strip mines operating in the Upper seam. The underground mine, working on the No. 4 or Deep seam, was closed down in 1945.

(2) Stoker prepared in so called large and small size: large ½x2 in. rd.; small ¼, ½x1 in. rd. Small stoker also called "pea".

SASKATCHEWAN **Souris (Roche Percee Division)** PORTAL COALS LTD. (1) STRIP PITS ON LEASES 6248, 7233 and 7238-7242 **OLD MAC** (2) 300-400,000 Sec. 30; Tp. 1; R. 6; and Secs. 22-30; Tp. 1; R. 7; W. of 2nd (near Roche Percee). Upper					SASKATCHEWAN **Souris (Roche Percee Division)** ZIEGLGANSBERGER, F. (5) GOLDEN GLOW **GOLDEN GLOW** Under 1,000 Roche Percee—Tp. 1; R. 6 and 7; W. of 2nd
Lump and Cobble	Stove	Nut	Stoker	Bug Dust	Lump
(3)	2 x 4 rd.	1 x 2 rd.	(4)	0 x ½ rd.	+8 rd.
5	4	3	8	2	1
31·0	30·0	30·0	29·5	28·5	31·0
6·9	6·9	7·4	7·4	9·2	6·1
26·9	27·9	29·3	27·1	26·9	27·9
35·2	35·2	33·3	36·0	35·4	35·0
7,745	7,955	7,950	7,945	7,815	7,900
2095	2180	2130	2165	2140	2130
Non-agglomerate 0					Non-agglomerate 0
Non-caking					Non-caking
46·5					
3·2					
0·8					
0·5	0·5	0·5	0·5	0·5	0·3
11·1					
33·7	33·7	33·7	33·7	33·7	33·6
7,445	7,535	7,530	7,470	7,250	7,600
Subbituminous C, border of Lignite 106—Black Lignite					Lignite 101—Black Lignite
46·5	40·5	41·7	40·0	39·0	
43·0	49·4	47·9	50·0	51·3	
53·2		58·0			

ANALYSES OF ASH— (Old Mac)

	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 Coals Ltd., operators. Subsidiary of Sinclair Mines (Canada) Ltd. This company has taken over the following mines:
   (*a*) Roche Percee Coal Mining Co. Ltd.—lease Nos. 7241, 7242 and 6248.
   (*b*) Robertson, Alex—lease No. 7233.
   (*c*) Albright, H.—lease Nos. 7238-40.

(2) Formerly sold as "Econo".

(3) Lump: + 8, 10, or 12 in. Cobble: 4 x 8, 10, or 12 in.

(4) ¼, ½, x 1½ or 2 in. rd.

(5) Not listed since 1943.

Province	SASKATCHEWAN
Area	**Souris (Estevan Division)**
Operator	ANDERSEN, NIELS (1)
Mine	ANDERSEN DEEP SEAM (LEASE No. 824)
Trade name	**ANDERSEN DEEP SEAM**
Output.....approx. tons/annum	Under 1,000
Location of Mine	Estevan—Sec. 28; Tp. 1; R. 8; W. of 2nd.
Seam	Deep
Size	Lump
Screen limits at mine.....in.	+ 8 rd.
No. of samples	1
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	31·0
Ash.....%	9·0
Volatile matter.....%	26·2
Fixed carbon.....%	33·8
Calorific value (As received).....B.t.u./lb.	7,320
Ash softening temperature.....°F.	2130
Caking Properties—	
Volatile matter residue—950°C	Non-agglomerate
Caking index (Gray)	0
Swelling Properties—	
Swelling index (A.S.T.M.)	
Swelling index (F.R.L.)	Non-caking
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·3
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	34·4
B.t.u./lb.....(capacity moisture basis)	6,940
Classification by Rank—	
A.S.T.M.	Lignite
S.V.I.	92—Lignite (2)
PHYSICAL PROPERTIES—	
Bulk density.....lb./cu. ft.	
cu. ft./ton	

REMARKS—

(1) Closed since 1947.

(2) Border of brown and black lignite.

SASKATCHEWAN **Souris (Estevan Division)** BOURQUIN & SONS, Geo. (1) WOODLAWN (PIONEER VALLEY) LEASE No. 824 **PIONEER VALLEY** 3–4,000 Estevan—Sec. 12; Tp. 2; R. 8; W. of 2nd.	SASKATCHEWAN **Souris (Estevan Division)** JENISH BROS. (2) JENISH BROS. **VALLEY GEM** 7–10,000 Estevan—Sec. 1; Tp. 2; R. 8; W. of 2nd.			
Lump	Lump	Cobble	Stove	Stoker
+ 8	+ 8 rd.	4 x 8 rd.	2 x 4 rd.	½ x 2 rd.
1	1	1	1	1
31·0	31·0	31·0	30·0	29·5
10·2	10·2	8·1	9·2	11·4
28·2	27·2	27·3	27·0	26·7
30·6	31·6	33·6	33·8	32·4
7,320	7,315	7,575	7,610	7,295
2170	2170	2110	2110	2130
Non-agglomerate 0	Non-agglomerate 0			
Non-caking	Non-caking			
0·3	0·3	0·3	0·3	0·3
35·0	32·4	32·4	32·4	32·4
6,895	7,165	7,420	7,350	6,995
Lignite 102—Black Lignite	Lignite 100—Black Lignite			
		41·0	42·5	41·5
		48·8	47·1	48·2

REMARKS—

(1) Prior to 1945 listed as Geo. Parkinson & Son. Not listed since 1949.

(2) Production from non-Crown holdings. Closed in 1952.

Province	SASKATCHEWAN
Area	**Souris (Estevan Division)**
Operator	TESSIER, E. (1)
Mine	TISDALE (2)
Trade name	**TISDALE**
Output.....approx. tons/annum	2-3,000
Location of Mine	Estevan—Sec. 33; Tp. 1; R. 8; W. of 2nd.
Seam	

Size	Lump	Nut	Nut Slack
Screen limits at mine.....in.	+ 8 rd.	½ x 2 rd.	0 x 2 rd.
No. of samples	1	2	2
CHEMICAL PROPERTIES—			
Proximate Analysis (As received)—			
Moisture.....%	31·0	31·0	29·5
Ash.....%	8·0	12·4	11·1
Volatile matter.....%	27·1	25·4	26·1
Fixed carbon.....%	33·9	31·2	33·3
Calorific value (As received).....B.t.u./lb.	7,580	7,000	7,285
Ash softening temperature.....°F.	2150	2110	2120
Caking Properties—			
Volatile matter residue—950°C		Non-agglomerate	
Caking index (Gray)		0	
Swelling Properties—			
Swelling index (A.S.T.M.)			
Swelling index (F.R.L.)		Non-caking	
Ultimate Analysis (As received)—			
Carbon.....%			
Hydrogen.....%			
Nitrogen.....%			
Sulphur.....%	0·3	0·4	0·3
Oxygen.....%			
Analyses for Classification—			
Capacity moisture.....%	34·0	34·0	34·0
B.t.u./lb.....(capacity moisture basis)	7,250	6,695	6,820
Classification by Rank—			
A.S.T.M		Lignite	
S.V.I		98—Lignite (3)	
PHYSICAL PROPERTIES—			
Bulk density.....lb./cu. ft.			41·0
cu. ft./ton			48·8

REMARKS—

(1) Successor in 1949 to Tisdale, A. E. Mine not listed since 1950.

(2) Operating on non-Crown lease.

(3) Border of brown and black lignite.

SASKATCHEWAN **Bengough, Willow Bunch & Wood Mountain**	SASKATCHEWAN **Shaunavon & East End**
GENERAL (1)	GENERAL (2)
10–20,000 Tps. 1 to 10; R.19 to 30; W. of 2nd. Tps. 1 to 6; R. 1 to 8; W. of 3rd.	5–10,000 Tp. 6 to 9; R. 18 to 22; W. of 3rd.
Mine Run or Lump	Mine Run or Lump
32	4(3)
37·0 8·9 26·6 27·5 6,065 2275	40·0 9·3 24·5 26·2 5,795 2200—2400
Non-agglomerate	Non-agglomerate 0
Non-caking	Non-caking
0·9	0·4
39·0 5,870	
Lignite 91—Brown Lignite	Lignite 82—Brown Lignite

REMARKS—

(1) See "Coal Mines in Canada" published annually by the Mineral Resources Division, Mines Branch, Ottawa. The area contains some 30 very small operations.

(2) See "Coal Mines in Canada" published annually by the Mineral Resources Division, Mines Branch, Ottawa. The area contains 12 to 15 very small operations.

(3) Three of the samples were from the mine operated by Spirka & Novak, on Crown lease No. 1836 in Tp. 9; R.18; W. of 3rd.

Province	SASKATCHEWAN
Area	**Souris**
Operator	Dominion Briquettes & Chemicals Ltd.
Coal used	(1)
Trade name	**HEAT GLOW BRIQUETTES**
Output.....approx. tons/annum	55-60,000
Location and type of plant	Taylorton—Low temperature Carbonization and Briquetting Plant

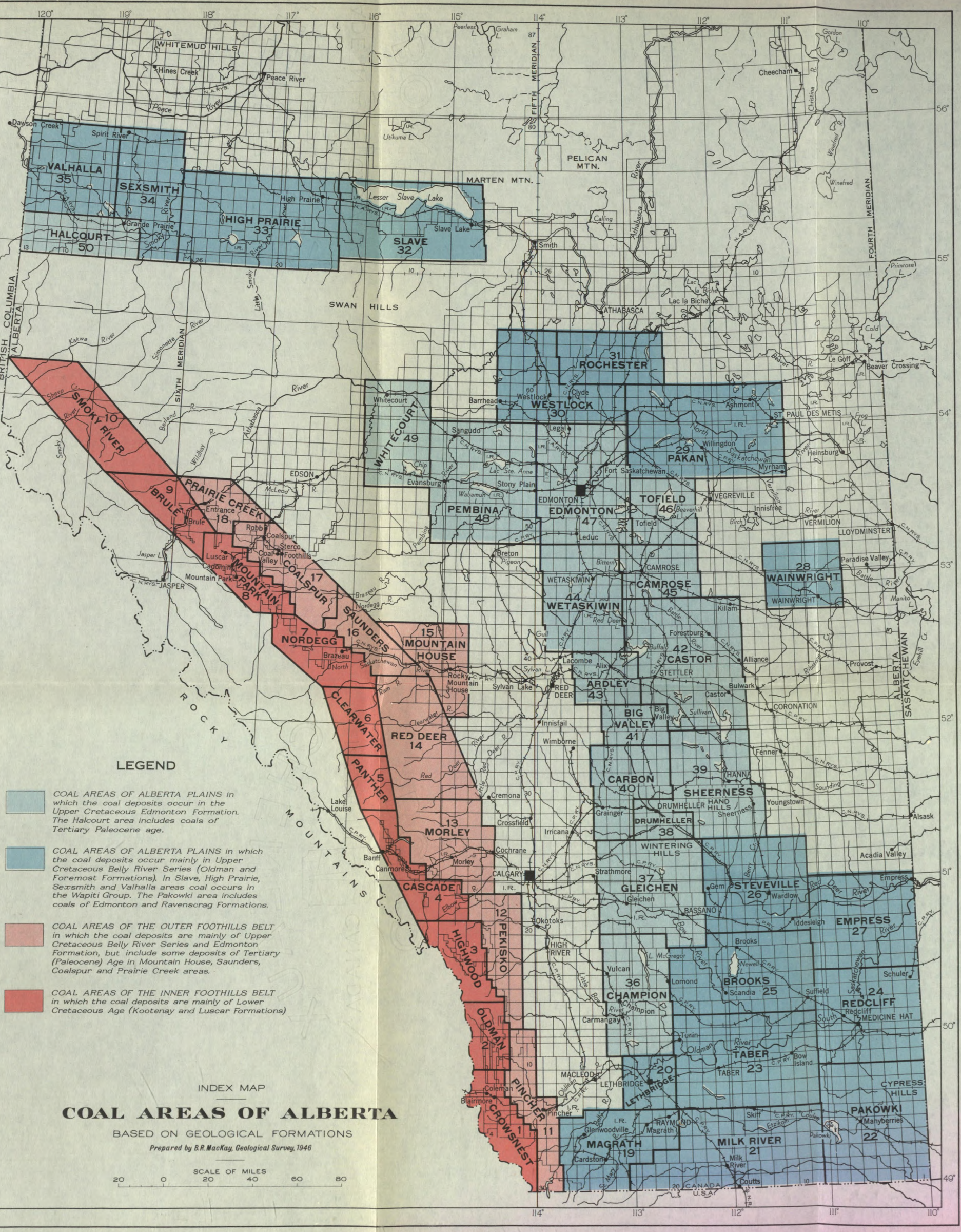
Type of fuel	Briquettes (3)
Size.....in.	2¼ x 2 x 1½
No. of samples	4
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	6·3
Ash.....%	12·5
Volatile matter.....%	18·0
Fixed carbon.....%	63·2
Calorific value (As received).....B.t.u./lb.	11,770
Ash softening temperature.....°F.	2105
Caking Properties—	
Volatile matter residue—950°C	Non-agglomerate
Caking index (Gray)	0
Swelling Properties—	
Swelling index (A.S.T.M.)	
Swelling index (F.R.L.)	Non-caking
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	1·0
Nitrogen.....%	
Sulphur.....%	
Oxygen.....%	
Physical Properties—	
Bulk density.....lb./cu. ft.	41·1
cu. ft./ton	48·6
Grindability index	
Resistance to Shattering (4 drops) (2)—	
Stability (+1½ in.).....%	92·5
Fines (−½ in.).....%	3·0
Tumbler Test (Friability)—	
Stability (+1 in.).....%	89·2
Abradability (−10 mesh).....%	10·8
Apparent Specific Gravity	1·18

Remarks—

(1) Lignite coal from M. & S. mine is carbonized in a Lurgi low temperature carbonization plant, and the char is briquetted with petroleum asphalt and lignite pitch.

(2) See pages 8-9 for significance of tests on briquettes.

(3) These are pillow-shaped weighing about 2¼ oz. each.



LEGEND

COAL AREAS OF ALBERTA PLAINS in which the coal deposits occur in the Upper Cretaceous Edmonton Formation. The Halcourt area includes coals of Tertiary Paleocene age.

COAL AREAS OF ALBERTA PLAINS in which the coal deposits occur mainly in Upper Cretaceous Belly River Series (Oldman and Foremost Formations). In Slave, High Prairie, Sexsmith and Valhalla areas coal occurs in the Wapiti Group. The Pakowki area includes coals of Edmonton and Ravenscrag Formations.

COAL AREAS OF THE OUTER FOOTHILLS BELT in which the coal deposits are mainly of Upper Cretaceous Belly River Series and Edmonton Formation, but include some deposits of Tertiary (Paleocene) Age in Mountain House, Saunders, Coalspur and Prairie Creek areas.

COAL AREAS OF THE INNER FOOTHILLS BELT in which the coal deposits are mainly of Lower Cretaceous Age (Kootenay and Luscar Formations)

INDEX MAP

COAL AREAS OF ALBERTA

BASED ON GEOLOGICAL FORMATIONS

Prepared by B.R. MacKay, Geological Survey, 1946

SCALE OF MILES

20 0 20 40 60 80

COAL AREAS OF ALBERTA

INNER FOOTHILLS BELT

	MAP NUMBER
CROWSNEST	1
OLDMAN	2
HIGHWOOD	3
CASCADE	4
PANTHER	5
CLEARWATER	6
NORDEGG	7
MOUNTAIN PARK	8
BRULE	9
SMOKY RIVER	10

OUTER FOOTHILLS BELT

PINCHER	11
PEKISKO	12
MORLEY	13
RED DEER	14
MOUNTAIN HOUSE	15
SAUNDERS	16
COALSPUR	17
PRAIRIE CREEK	18

ALBERTA PLAINS (BELLY RIVER SERIES)

MAGRATH	19
LETHBRIDGE	20
MILK RIVER	21
PAKOWKI	22
TABER	23
REDCLIFF	24
BROOKS	25
STEVEVILLE	26
EMPRESS	27
WAINWRIGHT	28
PAKAN	29
WESTLOCK	30
ROCHESTER	31
SLAVE	32
HIGH PRAIRIE	33
SEXSMITH	34
VALHALLA	35

(WAPITI GROUP)

ALBERTA PLAINS (EDMONTON FORMATION)

CHAMPION	36
GLEICHEN	37
DRUMHELLER	38
SHEERNESS	39
CARBON	40
BIG VALLEY	41
CASTOR	42
ARDLEY	43
WETASKIWIN	44
CAMROSE	45
TOFIELD	46
EDMONTON	47
PEMBINA	48
WHITECOURT	49
HALCOURT	50

Province	ALBERTA
Area	**Ardley**
Operator	GENERAL
Mine	(1)
Trade name	
Output.....approx. tons/annum	26-45,000 (2)
Location of Mine	Tps. 37 to 39; R. 22 and 23; W. of 4 th.
Seam and Formation	No. 14 (Ardley); No. 11 (Carbon)—Edmonton Formation
Size	Mine Run
Screen limits at mine.....in.	
No. of samples	(3)
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	18·0
Ash.....%	8·4
Volatile matter.....%	28·6
Fixed carbon.....%	45·0
Calorific value (As received).....B.t.u./lb.	9,470
Ash softening temperature.....°F.	2100
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
Ultimate Analysis (As received)—	
Carbon.....%	56·5
Hydrogen.....%	3·6
Nitrogen.....%	0·9
Sulphur.....%	0·3
Oxygen.....%	12·3
Analyses for Classification—	
Capacity moisture.....%	19·8
B.t.u./lb.....(capacity moisture basis)	9,260
Classification by Rank—	
A.S.T.M.	Subbituminous B
S.V.I.	105—Lignitic
PHYSICAL PROPERTIES—	
Bulk density.....lb./cu. ft. cu. ft./ton	

REMARKS—

(1) See "Coal Mines in Canada"—published annually by the Mineral Resources Division, Mines Branch, Ottawa.

(2) The bulk of output comes from strip pits; the largest operation in 1952 being Lynass, John H., "Gleniffer" Coal, mine No. 1675, mined at Delburne, Alta., in Sec. 20, Tp. 38, R. 23, W. of 4th.

(3) As insufficient data was available at these laboratories the typical analysis for the district given in Research Council of Alberta, Report No. 35, was used. These were corrected for probable "as delivered" moisture content.

Province	ALBERTA
Area	**Big Valley**
Operator	GENERAL
Mine	(1)
Trade name	
Output.....approx. tons/annum	25-35,000 (2)
Location of Mine	Tps. 34 to 36; R. 20 to 22; W. of 4th.
Seam and Formation	No. 14 (Ardley), No. 12 (Thompson), No. 11 (Carbon)—Edmonton Formation (3)
Size	Mine Run
Screen limits at mine.....in.	
No. of samples	3
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	18·0
Ash.....%	10·4
Volatile matter.....%	28·8
Fixed carbon.....%	42·8
Calorific value (As received).....B.t.u./lb.	9,040
Ash softening temperature.....°F.	2060
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
Ultimate Analysis (As received)—	(4)
Carbon.....%	53·0
Hydrogen.....%	3·5
Nitrogen.....%	0·9
Sulphur.....%	0·3
Oxygen.....%	13·9
Analyses for Classification—	
Capacity moisture.....%	21·8
B.t.u./lb.....(capacity moisture basis)	8,625
Classification by Rank—	
A.S.T.M	Subbituminous B
S.V.I	102—Lignitic
PHYSICAL PROPERTIES—	
Bulk density.....lb./cu. ft.	
cu. ft./ton	
Grindability index	
Resistance to Shattering (4 drops)	
Stability (+1½ in.).....%	
Fines (−½ in.).....%	

REMARKS—

(1) See "Coal Mines in Canada"—published annually by the Mineral Resources Division, Mines Branch, Ottawa.

(2) All strip pits—bulk of production from pits of Carbonite Corporation of Canada, Ltd., situated in Sec. 26, Tp. 35, R. 20, W. of 4th.

(3) Most of mining is conducted in No. 12 seam.

(4) Calculated from typical analysis reported in Research Council of Alberta, Report No. 35.

ALBERTA **Big Valley (District B)**	ALBERTA **Brooks**
CARBONITE CORPORATION OF CANADA LTD. (1) BIG VALLEY—No. 864 (STRIP PIT) **BIG VALLEY;** **FABRICOAL (BRIQUETTES)**	GENERAL (6)
20-30,000	85-135,000
BIG VALLEY—SEC. 36; Tp. 35; R. 20; W. OF 4th.	Tps. 16 & 17; R. 17; W. of 4th.
No. 12 (Thompson) —Edmonton Formation	No. 2 (Middle Seam) —Belly River Formation

Mine Run	Fabricoal Briquettes (2)	Slack	Mine Run, Egg, Nut
	4 x 5 x 7	0 x ¼	
3	1	1	39
18·0	20·9	22·0	17·0
10·4	8·6	14·0	13·4
28·8	33·9	24·0	28·9
42·8	36·6	40·0	40·7
9,040	9,260	7,965	9,060
2060	2250	2400	2365
	Non-agglomerate		Non-agglomerate
	0		0
	0		0
	0		Negative
(3)			
53·0			53·5
3·5			3·6
0·9			1·1
0·3	0·6	0·4	0·7
13·9			10·7
21·8		21·8	17·4
8,625		7,985	9,015
	Subbituminous B		Subbituminous B.
	102—Lignitic		117—Lignitic
		44·5	
		44·9	
			37·0
	(4)		
	91·7 (5)		
	5·2		

REMARKS—

(1) Formerly Big Valley Collieries (Alberta) Ltd. Plant not operating in late 1953.

(2) These are large bricks 4 x 5 x 7 inches weighing about 5 pounds, and prepared by means of an extrusion press using asphalt binder. The briquettes were made from the + ¼ in. lumps crushed to the size required. If 0 x ¼ in. slack were employed the ash content of the resultant briquettes would probably be substantially higher. As the above analysis is only of one sample it can only be taken as an indication of the quality.

(3) Calculated from typical analysis reported in Research Council of Alberta, Report No. 35.

(4) See pages 8-9 for significance of tests on briquettes.

(5) 89·2% of the bricks were retained on a 5 in. screen after shatter test.

(6) Only two operators listed in 1952, as shown below;

(*a*) Kleenbirn Collieries Ltd.—Kleenbirn mine No. 1404, (strip) Eyremore, Alberta, listed as closed in 1951, but as open in 1952.

(*b*) Oliver, R. C.—Buckhorn mine No. 1672 at Rolling Hills. (formerly Vogel mine). Listed in 1953 as Coral Coals Ltd.

N.B. Kleenbirn was main operator, producing 99% of the output in 1952.

Province	ALBERTA
Area	**Brooks (1)**
Operator	CORAL COALS LTD. (2)
Mine	No. 1672
Trade name	**ROLLING HILLS**
Output.....approx. tons/annum	
Location of Mine	Cecil—Tp. 14; R. 13; W. of 4th.
Seam and Formation	Belly River Formation

District in Area					
Size	Lump (3)	Egg (3)	Nut	Stoker	Slack
Screen limits at mine.....in.	+ 3¾ sq.	1¾ x 3¾ sq.	⅞ x 1¾ sq.	⅝ x 1½ sq.	0 x ⅝ sq.
No. of samples	1	1	1	1	1
CHEMICAL PROPERTIES—					
Proximate Analysis (As received)—					
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	28·0
Fixed carbon.....%	43·4	44·2	43·9	42·7	42·2
Calorific value (As received).....B.t.u./lb.	9,420(4)	9,545	9,580	9,210	9,020
Ash softening temperature.....°F.	2220	2180	2100	2230	2340
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		
Ultimate Analysis (As received)—					
Carbon.....%					
Hydrogen.....%					
Nitrogen.....%					
Sulphur.....%	0·6	0·4	0·6	0·5	0·4
Oxygen.....%					
Analyses for Classification—					
Capacity moisture.....%	18·8	18·8	18·8	18·8	18·8
B.t.u./lb.....(capacity moisture basis)	9,420(4)	9,545	9,580	9,210	9,020
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					

REMARKS—

(1) On border of Taber area.

(2) Previously listed as R. C. Oliver; trademarked "Buckhorn". Now associated with Century Coals Ltd., Calgary.

(3) Lump about 48·5% of output, egg about 21·5%.

(4) Calculated on basis of average mineral matter-free B.t.u.

* Capacity moisture used as no data were available for 'as delivered' moisture.

ALBERTA **Brooks**	ALBERTA **Camrose**
KLEENBIRN COLLIERIES LTD. (1) BIRNWEL—No. 1404 (2) **BIRNWEL**	GENERAL (5)
70-135,000	60-80,000
Eyremore (Kitsim)—Tp. 17, R. 17, W. of 4th.	Tps. 46 to 48; R. 18 to 20; W. of 4th.
No. 2 (Middle)—Belly River Formation	Edmonton Formation

Mine Run	Egg	Nut (3)	Pea	Slack (4)	District A Tp. 46; R. 19 and 20	District B Tp. 48; R. 19 and 20	District C Tp. 48; R. 18
	2 x 4 rd.	1½ x 2 rd.	⅜ sq. x 1½ rd.	0 x 2 rd.	Lump, Stove, Mine Run		
2	2	33	2	3	Total of 22 samples		
17·0	17·0	17·7	18·0	19·0	24·5	26·5	28·5
12·3	11·3	13·8	14·9	20·3	6·2	5·3	5·5
29·8	29·5	28·4	29·5	27·0	28·8	29·2	27·7
40·9	42·2	40·1	37·6	33·7	40·5	39·0	38·3
9,295	9,380	8,920	8,740	7,725	8,875	8,650	8,310
2380	2365	2325	2360	2280	2060		2130
		Non-agglomerate 0				Non-agglomerate 0	
		0 Negative				0 Negative	
54·2					51·9	51·0 (6)	50·0
3·7					3·5	3·5	3·3
1·1					1·1	1·0	1·0
0·7	0·7	0·6	0·7	1·0	0·4	0·4	0·4
11·0					12·4	12·3	11·3
17·4	17·4	17·4	17·4	17·4	25·6	26·5	28·2
9,250	9,335	8,950	8,800	7,875	8,745	8,650	8,345
		Subbituminous B 111—Lignitic				Subbituminous C Lignitic	
56·1	47·1	45·8	46·5	50·0			
35·7	42·5	43·7	43·0	40·0			
37·3				36·3			

ANALYSES OF ASH— (Birnwel)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	51·0	10·7	16·4	7·7	1·5	0·01	5·2	1·1	0·8	0·6	3·6

REMARKS—

(1) Formerly Birnwel Coal Ltd., an emergency strip operation.
(2) Strip mine.
(3) Sometimes referred to as "Stoker Nut".
(4) Slack also 0 x ⅜ in. sq.
(5) See "Coal Mines in Canada"—1952, Publication No. 4-1, Mineral Resources Division, Mines Branch, Ottawa.
(6) Calculated from analyses in Research Council of Alberta, Report No. 35.

Province	ALBERTA
Area	**Camrose (District A)**
Operator	Camrose Collieries Ltd. (1)
Mine	Camrose—No. 1603 (2)
Trade name	**CAMROSE**
Output.....approx. tons/annum	50–80,000
Location of Mine	Camrose—Sec. 29; Tp. 46; R. 19; W. of 4th.
Seam and Formation	Edmonton Formation
Size	Lump (3)
Screen limits at mine.....in.	+2
No. of samples	3
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	24·5
Ash.....%	5·8
Volatile matter.....%	29·0
Fixed carbon.....%	40·7
Calorific value (As received).....B.t.u./lb.	8,795
Ash softening temperature.....°F.	2065
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
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·4
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	25·5
B.t.u./lb.....(capacity moisture basis)	8,680
Classification by Rank—	
A.S.T.M.	Subbituminous C
S.V.I.	106—Lignitic
Physical Properties—	
Bulk density.....lb./cu. ft.	
cu. ft./ton	

Remarks—

(1) Up to 1947 listed as Camrose Collieries Ltd., as war emergency operation, then as Alberta Coal Co., Ltd., reverting to Camrose Collieries Ltd. in 1949 and then back to Alberta Coal Co., (Fred Mannix Co. Ltd.) in 1950. Listed as Camrose Collieries Ltd., again in 1953.

(2) Stripping pit.

(3) Analyses of samples collected May 1953 by Company and analysed at University of Alberta indicate lower ash contents for Lump and other sizes. The analyses on 'as received' basis were as follows:

		Mine Run	*Lump*	*Stove*	*Stoker*
Moisture	%	23·0	20·6	23·7	25·2
Ash	%	3·9	2·8	2·8	3·8
Volatile matter	%	31·1	31·9	30·9	30·6
Fixed carbon	%	42·0	44·7	42·6	40·4
Calorific value	B.t.u./lb.	8,970	9,310	9,085	8,730

(Average dry mineral matter-free B.t.u. is 12,388, in comparison with 12,732 F.R.L. analysis.)

ALBERTA **Camrose (District B)** CANADIAN DINANT COAL CO., LTD. (1) CANADIAN DINANT—No. 374 **CANADIAN DINANT** 20–30,000 Dinant—Sec. 12; Tp. 48; R. 20; W. of 4th. Edmonton Formation			ALBERTA **Camrose (District B)** PROSKOW, JOSEPH PROSKOW—No. 241 (STRIP PIT) **PROSKOW** Under 10,000 Dinant—Sec. 18; Tp. 48; R. 19; W. of 4th. Dinant—Edmonton Formation
D. S. Lump + 6 rd.	Stove 1½ x 6 rd.	Nut Slack 0 x ¾ rd.	Mine Run, Lump
5	1	1	1
24·5 6·1 29·0 40·4 8,870 2065	24·5 7·0 28·1 40·4 8,690 2020	26·5 11·4 25·5 36·6 7,870 2170	26·5 5·3 29·2 39·0 8,650
	Non-agglomerate 0		Non-agglomerate 0
	0 Negative		0 Negative
(2) 51·9 3·5 1·1 0·4 12·5	0·3	0·4	0·4
26·4 8,650	26·4 8,470	26·4 7,880	26·5 8,650
	Subbituminous C 104—Lignitic		Subbituminous C 105—Lignitic
	47·0 42·6	47·5 42·1	

REMARKS—

(1) Not operating since 1942.

(2) Calculated from analysis in Research Council of Alberta, Report No. 35.

Province	ALBERTA
Area	**Camrose (District C)**
Operator	Red Flame Coal Co. Ltd.
Mine	Banner—No. 1420 (1)
Trade name	**BANNER**
Output.....approx. tons/annum	2-6,000
Location of Mine	Round Hill—Sec. 30; Tp. 48; R. 18; W. of 4th.
Seam and Formation	Edmonton Formation

	Screened Mine Run	Lump
Size		
Screen limits at mine.....in.	+ 1½ Bar	+ 2½ Bar
No. of samples	1	2
Chemical Properties—		
Proximate Analysis (As received)—		
Moisture.....%	28·5	28·5
Ash.....%	5·2	4·9
Volatile matter.....%	27·2	28·1
Fixed carbon.....%	39·1	38·5
Calorific value (As received).....B.t.u./lb.	8,350	8,415
Ash softening temperature.....°F.	2080	2155
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	
Ultimate Analysis (As received)—		
Carbon.....%	50·2	
Hydrogen.....%	3·3	
Nitrogen.....%	1·0	
Sulphur.....%	0·4	0·4
Oxygen.....%	11·4	
Analyses for Classification—		
Capacity moisture.....%	28·2	28·2
B.t.u./lb.....(capacity moisture basis)	8,385	8,450
Classification by Rank—		
A.S.T.M	Subbituminous C	
S.V.I	98—Lignitic	
Physical Properties—		
Bulk density.....lb./cu. ft.		
cu. ft./ton		

Remarks—

(1) Idle since 1943.

ALBERTA **Camrose (District C)** RED FLAME COAL CO., LTD. RED FLAME—No. 1420 (1) **RED FLAME** 30–40,000 Round Hill—Sec. 19; Tp. 48; R. 18; W. of 4th. Edmonton Formation		ALBERTA **Camrose (District A)** STONEY CREEK COLLIERIES LTD. (2) STONEY CREEK—No. 244 **STONEY CREEK** 10–20,000 Camrose—Sec. 28, 33; Tp. 46; R. 20; W. of 4th Edmonton Formation
Mine Run	Lump	Lump, Stove
	+ 2½ Bar	1½ x 8, 2 x 4
1	1	5
28·5	28·5	24·5
8·7	5·4	6·7
26·0	27·4	28·6
36·8	38·7	40·2
7,765	8,310	8,335
2100	2080	2055
Non-agglomerate 0		Non-agglomerate 0
0 Negative		0 Negative
47·9		
3·1		
1·0		
0·4	0·4	0·3
10·4		
28·2	28·2	25·5
7,800	8,345	8,715
Subbituminous C 93—Lignitic		Subbituminous C 116—Lignitic
		44·9 44·6

REMARKS—

(1) Not listed since 1950.

(2) Not listed since 1944—probably Camrose Collieries Ltd. in 1945 in Tp. 46; R. 19; W. of 4th.

Province	ALBERTA
Area	**Camrose (District C)**
Operator	STRILCHUK, LEO
Mine	STRILCHUK—No. 610 (1)
Trade name	**STRILCHUK**
Output.....approx. tons/annum	Under 2,000
Location of Mine	Ohaton—Sec. 10; Tp. 48; R. 18; W. of 4th.
Seam and Formation	Upper—Edmonton Formation

Size	Mine Run, Lump
Screen limits at mine.....in.	
No. of samples	1
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	28·5
Ash.....%	3·9
Volatile matter.....%	29·4
Fixed carbon.....%	38·2
Calorific value (As received).....B.t.u./lb.	8,590
Ash softening temperature.....°F.	2210
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
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·4
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	28·2
B.t.u./lb.....(capacity moisture basis)	8,625
Classification by Rank—	
A.S.T.M	Subbituminous C
S.V.I	105—Lignitic
PHYSICAL PROPERTIES—	
Bulk density.....lb./cu. ft.	
cu. ft./ton	

REMARKS—

(1) Stripping Pit. Last listed in 1948.

ALBERTA **Carbon (Districts A & C)**		ALBERTA **Carbon (District C)**
GENERAL (1)		CARBON BLACK COALS (4) RADIANT—No. 1396 **RADIANT**
60–70,000		10–20,000
Tps. 29 to 33; R. 22 to 24; W. of 4th. (2) (3)		Carbon—Sec. 10; Tp. 29, R. 23; W. of 4th.
No. 11 (Carbon), No. 14 (Ardley)—Edmonton Formation		No. 11 (Carbon)—Edmonton Formation
Lump and Stove	Slack	Lump
7	3	2
16·5	17·5	16·5
10·1	11·3	10·2
29·0	27·9	30·2
44·4	43·3	43·1
9,640	9,370	9,650
2190	2235	2100
Non-agglomerate 0		Non-agglomerate 0
0 Negative		0 Negative
		(5)
56·6		57·1
3·6		3·7
1·1		1·2
0·3	0·4	0·3
11·8		11·0
17·4	17·4	16·5
9,535	9,370	9,650
Subbituminous B 111—Lignitic		Subbituminous B 113—Lignitic
48·5	52·5	
41·2	38·1	

REMARKS—

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

(2) District A:—Tps. 31–33, R.22–24.
District C:—Tp. 29; R.22–23.

(3) District B: Tps. 31–32; R.21. Typical analysis of coal from this district in accordance with Research Council of Alberta, Report No. 35, is as follows:
Moisture: 19·3%; Ash: 8·1%; Volatile Matter: 29·6%; Fixed Carbon: 43·0%;
Sulphur: 0·3%; Calorific Value: 9,380 B.t.u./lb.

(4) Not listed since 1941.

(5) Calculated from analysis in Research Council of Alberta, Report No. 35.

Province	ALBERTA
Area	**Carbon (District A)**
Operator	Inland Coal Co., Limited (1)
Mine	Knee Hill Valley (Union)—No. 384
Trade name	**KNEE HILL VALLEY**
Output.....approx. tons/annum	15-30,000
Location of Mine	Three Hills—Sec. 36; Tp. 31; R. 24; W. of 4th.
Seam and Formation	No. 14 (Ardley)—Edmonton Formation

Size	D. S. Lump	Stove	Nut Slack
Screen limits at mine.....in.	+ 6 Bar	1¼ x 2	0 x 1¼
No. of samples	3	2	1
Chemical Properties—			
Proximate Analysis (As received)—			
Moisture.....%	16·5	16·5	17·5
Ash.....%	9·8	10·4	12·2
Volatile matter.....%	28·4	28·5	26·9
Fixed carbon.....%	45·3	44·6	43·4
Calorific value (As received).....B.t.u./lb.	9,640	9,625	9,210
Ash softening temperature.....°F.	2215	2250	2220
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	
Ultimate Analysis (As received)—			
Carbon.....%	56·3		
Hydrogen.....%	3·4		
Nitrogen.....%	0·9		
Sulphur.....%	0·4	0·4	0·4
Oxygen.....%	12·7		
Analyses for Classification—			
Capacity moisture.....%	17·4	17·4	17·4
B.t.u./lb.....(capacity moisture basis)	9,540	9,520	9,220
Classification by Rank—			
A.S.T.M.		Subbituminous B	
S.V.I.		108—Lignitic	
Physical Properties—			
Bulk density.....lb./cu. ft.		48·5	52·5
cu. ft./ton		41·2	38·1
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—

(1) Listed previously as Canadian Dinant Coal Co., Limited.

ALBERTA **Carbon (District C)**	ALBERTA **Cascade**
PEERLESS COAL COMPANY (1) No. 1600 **PEERLESS—CARBON** 7-18,000 Carbon—Sec. 15; Tp. 29; R. 23; W. of 4th No. 11 (Carbon)—Edmonton Formation	THE CANMORE MINES LTD. (11) No. 4 (NEW MINE); MORRIS (OLD MINE) No. 2 (10) (13) **CANMORE SMOKELESS; CANMORE NUSEAM** 250-350,000 Canmore—Sec. 29; Tp. 24; R. 10; W. of 5th No. 4 Seam (New Mine); No. 2 Seam (Old Mine)—Kootenay Formation

Slack	Commercial Mine Run(2)	Lump, Stove and Nut	Stoker(6)	Slack	Briquettes(7
	+ ¼ sq.	(3)	¼ sq. x 1½ rd.	0 x ¼ sq.	2½ x 2½ x 1¼ (2·5 oz.)
1	6	13	10	7	31
17·5	1·5	1·5	1·5	2·0	1·8
12·0	9·9	9·1	9·3	9·5	6·8
29·4	13·8	13·1	12·9	13·7	17·1
41·1	74·8	76·3	76·3	74·8	74·3
9,290	13,615	13,740	13,785	13,685	14,352
	2260–2850+	2500–2850+	2640–2850+	2270–2850+	2850+
Non-agglomerate 0	W.A.	W.A. 0–10 (4)	W.A.	W.A. 0—10	Agglomerate
0 Negative	3·8 80·4	0 Negative		0 Negative	1 (8)
	80·4 3·8 1·5				
0·4	0·7 2·2	0·6	0·6	0·7	0·7
16·5 9,400					
Subbituminous B 114—Lignitic	Low volatile bituminous to Semianthracite 204—Meta to Semi-bituminous				
	56·0 35·7	52·0 38·5	51·0 39·2	52·0 38·5	43·5 46·0
	(5) 73·8			85·3	
	(12)				76·7 9·5
					91·0 8·7 1·19

ANALYSES OF ASH (9)— (Canmore Smokeless; Canmore Nuseam)

	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	0·4	1·1	1·5

REMARKS—

(1) Not listed since 1949.
(2) Large proportion of the commercial coal comes from No. 4 seam and is trade named "Nuseam", all sizes of commercial coal may be dust-proofed by a hot oil process.
(3) Lump: + 2¾" rd. Stove: 1¾" x 2¾" rd.
(4) Caking Index—No. 2 seam: up to 10; No. 4 seam: non-caking.
(5) No. 4 seam coal somewhat more amenable to grinding than No. 2 seam.
(6) Stoker also referred to as "blower" and "pea".
(7) Petroleum asphalt used as binder. Commercial type briquettes. (Also make railway type briquettes.)
(8) Very slightly swelling as a result of added petroleum asphalt binder.
(9) Ash analysis of No. 2 and No. 4 seams mixed.
(10) No. 2 mine closed.
(11) In 1952 operating mainly on No. 4 seam, and Upper Marsh seam (No. 3 mine).
(12) See pages 8–9 for significance of tests on briquettes.
(13) A new mine has been opened in the Cairnes seam. No samples included in above analyses.

Province	ALBERTA
Area	**Cascade**
Operator	KANANASKIS EXPLORATION & DEVELOPMENT CO. LTD. (1)
Mine	No. 1667 (2)
Trade name	**CASCADE**
Output.....approx. tons/annum	60-90,000
Location of Mine	Sec. 3; Tp. 23; R. 9; W. of 5th.
Seam and Formation	Several Seams—Kootenay Formation

	Lump, Cobble	Stove, Nut	Stoker	Briquettes (3) 2x1⅝x1 (1·3 oz.)
Size				
Screen limits at mine.....in.				
No. of samples	6	2	2	10
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	1·5	1·5	1·5	1·0
Ash.....%	13·8	18·6	17·6	14·6
Volatile matter.....%	12·1	11·7	12·4	16·3
Fixed carbon.....%	72·6	68·2	68·6	68·1
Calorific value (As received).....B.t.u./lb.	12,940	12,075	12,300	13,130
Ash softening temperature.....°F.	2750+	2750+		2750+
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			
Ultimate Analysis (As received)—				
Carbon.....%				
Hydrogen.....%				
Nitrogen.....%				
Sulphur.....%	0·3	0·3	0·5	0·4
Oxygen.....%				
Analyses for Classification—				
Capacity moisture.....%				
B.t.u./lb.....(capacity moisture basis)				
Classification by Rank—				
A.S.T.M	Semianthracite			
S.V.I.	221—Semi-bituminous			
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.				45·0
cu. ft./ton				44·4
Grindability index				
Resistance to shattering (4 drops) (4)				
Stability (+ 1½ in.).....%				75·0
Fines (—½ in.).....%				7·6
Tumbler Test (Friability)				
Stability (+ 1 in).....%				94·7
Abradability (— 10 mesh).....%				5·3
Apparent specific gravity				1·25

REMARKS—

(1) Closed down in 1952.

(2) Tipple and briquetting plant at Seebe, Alberta.

(3) These were domestic-type briquettes—ovoid in shape.

(4) See pages 8-9 for significance of tests on briquettes.

ALBERTA **Cascade**	ALBERTA **Castor (District B and C)**
WHEATLEY & SONS, FRANK	GENERAL
WHEATLEY—No. 1244 **WHEATLEY BROS.**	(2)
1500-2500	200-275,000 (3)
Sec. 8; Tp. 26; R. 11; W. of 5th. (Near Banff)	Tps. 37 to 44; R. 14 to 20; W. of 4th. (near Castor.)
Kootenay Formation.	Several Seams—Edmonton Formation.
Mine Run	Mine Run and Lump
3	17
	(4)
3·0	25·0
6·6	7·1
11·1	30·3
79·3	37·6
13,990	8,355
	2290
Non-caking to slight agglomerate	Non-agglomerate
0 Negative	0 Negative
83·2	48·9
3·9	3·1
1·2	0·9
1·5	0·4
0·6	14·4
	28·0
	8,020
Semianthracite (1) 248—Semianthracite	Subbituminous C 98—Lignitic

REMARKS—

(1) Some of the samples were slightly agglomerating and thus might be classed as low volatile bituminous. (2) See "Coal Mines in Canada", Publication No. 4-1, Mineral Resources Division, Mines Branch, Ottawa. (3) Production increased from 71,000 in 1947 to over 270,000 tons in 1952. Largest operator, Forestburg Collieries Ltd., (listed since 1948), with production over 170,000 tons in 1952. (4) The analysis is for coal coming from the district included in Tps. 37 to 39; R. 14 and 15; and listed as Districts B and C in and Research Council of Alberta, Report No. 35.

According to Report No. 35 the districts and typical analyses are as follows:

	District A Tps. 41-44; R.17-20	*District B* Tps. 39-41; R.15-16	*District C* Tps. 37-38; R. 14
Moisture %.....	25·2	26·4	29·5
Ash %.....	6·7	6·3	6·2
B.t.u./lb.....	8,710	8,550	7,980

Province	ALBERTA
Area	**Castor (District B)**
Operator	Battle River Coal Co. Ltd. (1)
Mine	Cordel—No. 1046 (Strip Pit)
Trade name	**VESTA**
Output.....approx. tons/annum	40-60,000
Location of Mine	Sec. 20; Tp. 40; R. 15; W. of 4th.—Halkirk
Seam and Formation	Lower (2)—Edmonton Formation

Size	Mine Run	Egg	Nut	Stoker	Slack
Screen limits at mine.....in.			½ x 2		
No. of samples	5	1	2	1	1
Chemical Properties—					
Proximate Analysis (As received)—					
Moisture.....%	24·0	24·0	24·0	25·0	27·0
Ash.....%	7·6	7·4	8·1	8·9	8·5
Volatile matter.....%	29·3	29·4	29·6	30·0	28·0
Fixed carbon.....%	39·1	39·2	38·3	36·1	36·5
Calorific value (As received).....B.t.u./lb.	8,730	8,700	8,585	8,380	8,085
Ash softening temperature.....°F.	2225	2110	2125	2170	2170
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		
Ultimate Analysis (As received)—					
Carbon.....%	50·1				
Hydrogen.....%	3·3				
Nitrogen.....%	0·9				
Sulphur.....%	0·4	0·3	0·3	0·3	0·2
Oxygen.....%	13·7				
Analyses for Classification—					
Capacity moisture.....%	26·5	26·5	26·5	26·5	26·5
B.t.u./lb.....(capacity moisture basis)	8,440	8,415	8,300	8,215	8,140
Classification by Rank—					
A.S.T.M.....			Subbituminous C		
S.V.I.....			101—Lignitic		
Physical Properties—					
Bulk density.....lb./cu. ft.		44·5	43·0	42·5	36·5
cu. ft./ton		44·9	46·5	47·1	54·8

Remarks—

(1) Formerly Alberta Coal Co. (Battle River)—Operation started by Fred Mannix Co. Ltd. in 1948. Ownership changed in 1952 and now associated with West Canadian Collieries, Ltd.

(2) 7-8 ft. thick.

ALBERTA **Castor (District C)** CASTOR COAL AND CONSTRUCTION CO. (1) No. 1608 AND No. 1343 (HADEN) **CASTOR CREEK; TOWER** 10-15,000 Castor—Sec. 32; Tp. 38; R. 14; W. of 4th. Castor (Upper)—Edmonton Formation	ALBERTA **Castor (District C)** EASTON, JAMES (2) No. 1417 (STRIP MINE) **BURN-RITE** (3) Under 5,000 Castor—Sec. 34; Tp. 37; R. 14; W. of 4th. Edmonton Formation
Lump	Mine Run
2	2
25·0 8·9 30·3 35·8 8,085 2560	25·0 6·2 30·2 38·6 8,505 2270
Non-agglomerate 0	Non-agglomerate 0
0 Negative	0 Negative
48·4 3·2 0·9 0·4 13·2	0·4
29·5 7,600	29·5 7,995
Subbituminous C 98—Lignitic	Subbituminous C 98—Lignitic

REMARKS—

(1) From 1944 to 1947 operated as an emergency operation under the name Castor Creek Collieries Ltd. This was a strip operation. Closed since 1949. Mine No. 1343 operated by Joseph Haden since 1951.

(2) Formerly J. Armstrong.

(3) Formerly "Home Comfort".

Province	ALBERTA
Area	**Castor (District B)**
Operator	Forestburg Collieries Ltd. (1)
Mine	No. 1578 (Strip Pit)
Trade name	**DIPLOMAT**
Output.....approx. tons/annum	100-175,000
Location of Mine	Hastings Coulee—Sec. 36; Tp. 40; R. 16; W. of 4th.
Seam and Formation	Edmonton Formation

	Lump and Stove	Stoker Nut (2)	Slack
Size			
Screen limits at mine.....in.	+4 rd.; 2 x 4 rd.	½ x 2 rd.	0 x ½
No. of samples	4	22	3
Chemical Properties—			
Proximate Analysis (As received)—			
Moisture.....%	24·5	25·2	24·0
Ash.....%	7·1	7·2	7·9
Volatile matter.....%	28·8	29·0	28·8
Fixed carbon.....%	39·6	38·6	39·3
Calorific value (As received).....B.t.u./lb.	8,825	8,565	8,685
Ash softening temperature.....°F.	2110	2210	2085
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	
Ultimate Analysis (As received)—			
Carbon.....%	50·4		
Hydrogen.....%	3·6		
Nitrogen.....%	0·9		
Sulphur.....%	0·4	0·4	0·3
Oxygen.....%	13·1		
Analyses for Classification—			
Capacity moisture.....%	26·5	26·5	26·5
B.t.u./lb.....(capacity moisture basis)	8,590	8,415	8,400
Classification by Rank—			
A.S.T.M		Subbituminous C	
S.V.I		110—Lignitic	
Physical Properties—			
Bulk density.....lb./cu. ft.	48·0	45·0	44·8
cu. ft./ton	41·7	44·4	44·6
Grindability index	37·6	36·6	36·6

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, Manitoba.

(2) Nut—1 x 2 in. rd., Pea—½ x 1 in. rd.

ALBERTA **Castor (District C)**	ALBERTA **Castor (District C)**
REMILLARD, O. V. REMILLARD—No. 902 **REMILLARD** Under 6,000 Castor—Sec. 33; Tp. 37; R. 14; W. of 4th. Edmonton Formation	SHAW, MRS. DAN (1) No. 1361 **HILLTOP** Under 6,000 Castor—Tp. 37; R. 14; W. of 4th. Edmonton Formation
Mine Run	Mine Run
2	1
25·0 10·7 29·4 34·9 7,835 2180	25·0 7·2 30·8 37·0 8,325 2220
Non-agglomerate 0	Non-agglomerate 0
0 Negative	0 Negative
0·4	0·3
29·5 7,365	29·5 7,823
Subbituminous C 97—Lignitic	Subbituminous C 98—Lignitic

REMARKS—
(1) Not listed since 1945.

Province	ALBERTA
Area	**Champion**
Operator	GENERAL
Mine	(1)
Trade name	
Output.....approx. tons/annum	6-8,000
Location of Mine	Near Champion—Tps. 14, 15, 16; R. 21, 22, 23; W of 4th.
Seam and Formation	Edmonton Formation.
Coal Seam Mined	
Size	Face Samples (2)
Screen limits at mine.....in.	
No. of samples	2
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	12·7
Ash.....%	6·6
Volatile matter.....%	32·8
Fixed carbon.....%	47·9
Calorific value (As received).....B.t.u./lb.	10,470
Ash softening temperature.....°F.	1990
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
Ultimate Analysis (As received)—	
Carbon.....%	61·5
Hydrogen.....%	4·2
Nitrogen.....%	1·2
Sulphur.....%	0·5
Oxygen.....%	13·3
Analyses for Classification—	
Capacity moisture.....%	12·7
B.t.u./lb.....(capacity moisture basis)	10,470
Classification by Rank—	
A.S.T.M.	Subbituminous A
S.V.I.	107—Lignitic
PHYSICAL PROPERTIES—	
Bulk density.....lb./cu. ft.	
cu. ft./ton	
Grindability index	

REMARKS—

(1) Four small operations in 1952. See "Coal Mines in Canada"—published by Mineral Resources Division, Mines Branch, Ottawa.

(2) The samples are from Tps. 15 and 16, R. 23, and correspond to District A, as listed in Research Council of Alberta Report No. 35.

ALBERTA
Coalspur

GENERAL
(1)

700-800,000
Tps. 47-49; R. 19, 20 and 21; W. of 5th.
Mynheer and Val d'Or—Saunders Formation.

ALBERTA
Coalspur (District A)

BRYAN MOUNTAIN COAL CO., LTD. (2)
BRYAN—No. 1157 (3)
BRYAN MOUNTAIN HARD
60-90,000
Near Robb—Sec. 22; Tp. 49; R. 21; W. of 5th.
Val d'Or Seam—Saunders Formation.

Mynheer Mine Run Lump, Stove	*Mynheer* Nut, Pea, Stoker	*Val d'Or* Lump, Egg	*Val d'Or* Nut, Pea	Lump and Egg (4)	Nut 1 x 1¾	Stoker ¼ x 1	Slack 0 x 2
31	36	53	10	10	1	1	7
8·0	8·0	8·8	9·1	10·0	10·0	10·0	10·0
13·8	16·2	11·1	12·3	12·4	14·5	12·6	14·4
32·2	31·4	33·7	33·2	34·7	33·4	33·4	35·1
46·0	44·4	46·4	45·4	42·9	42·1	44·0	40·5
10,440	10,205	10,690	10,525	10,235	10,010	10,275	10,010
2375	2500	2175	2180	2230	2200	2190	2225
Weak agglomerate 0				Weak agglomerate 0			
0 Negative				0 Negative			
				(5)			
60·5		62·5		60·6			
4·1		4·0		3·9			
0·9		0·8		0·8			
0·3	0·3	0·2	0·2	0·2	Trace	Trace	0·5
12·4		12·6		12·1			
8·3	8·3	9·2	9·2	10·0	10·0	10·0	10·0
10,405	10,170	10,640	10,525	10,235	10,010	10,275	10,010
High volatile C bituminous 122 123 Lignitic—border of subbituminous				High volatile C bituminous 122—Lignitic, border of Subbituminous			
54·4	49·8	51·1	50·4	52·0	52·5	51·0	52·5
36·8	40·2	39·1	39·7	38·5	38·1	39·2	38·1
54·5		43·6		50·6	51·8	48·7	48·9

REMARKS—

(1) *Mynheer Seam:* Sterling—Coal Valley Mining Co. Ltd.; Cova and Sterling mines (strip pits).
Val d'Or Seam: The Foothills Collieries Ltd.—Foothills mine.
Canadian Collieries (Dunsmuir) Ltd.—McLeod River mine.
Lakeside Coals Ltd.—mine No. 2 (closed).
Bryan Mountain Coal Co. Ltd.

(2) Formerly Bryan Hard Coal Co. Ltd., which was closed in 1948. Mine reopened in 1950 as Northwestern Oil and Coal Co., Ltd., and name changed to above in 1952.

(3) Dry cleaning equipment recently installed for cleaning certain smaller sizes, such as nut and stoker. Lump is handpicked.

(4) Lump— + 4 in., Egg—1¾ x 4 in.

(5) Calculated.

Province	ALBERTA
Area	**Coalspur (District B)**
Operator	Foothills Collieries Ltd.
Mine	Foothills—No. 771
Trade name	**FOOTHILLS**
Output.....approx. tons/annum	100-150,000
Location of Mine	Foothills—Sec. 24; Tp. 47; R. 20; W. of 5th.
Seam and Formation	Val d'Or—Saunders Formation

	Lump	Egg, Stove	Nut, Pea Stoker	Slack
Size				
Screen limits at mine.....in.	+ 4 rd.	2 sq. x 4 rd.	1 x 2, $\frac{5}{8}$ x 1	0 x $\frac{5}{8}$, 1
No. of samples	15	6	2	3
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	8·5	8·5	8·5	10·0
Ash.....%	10·0	11·1	10·6	11·3
Volatile matter.....%	34·1	33·7	34·5	33·5
Fixed carbon.....%	47·4	46·7	46·4	45·2
Calorific value (As received).....B.t.u./lb.	10,985	10,830	10,800	10,630
Ash softening temperature.....°F.	2180	2150	2135	2170
Caking Properties—				
Volatile matter residue—950°C		Weak agglomerate		
Caking index (Gray)		0		
Swelling Properties—				
Swelling index (A.S.T.M.)		0		
Swelling index (F.R.L.)		Negative		
Ultimate Analysis (As received)—				
Carbon.....%	63·7			
Hydrogen.....%	4·1			
Nitrogen.....%	0·8			
Sulphur.....%	0·2	0·2	0·3	0·3
Oxygen.....%	12·7			
Analyses for Classification—				
Capacity moisture.....%	8·5	8·5	8·5	8·5
B.t.u./lb.....(capacity moisture basis)	10,985	10,830	10,800	10,805
Classification by Rank—				
A.S.T.M		High volatile C bituminous		
S.V.I.		123—Subbituminous		
Physical Properties—				
Bulk density.....lb./cu. ft.	48·8	48·8	49·8	51·0
cu. ft./ton	41·0	41·0	40·2	39·2
Grindability index	44·2			44·2

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

ALBERTA
Coalspur (District A)

LAKESDIE COALS LTD. (1)
MINE No. 2 (MINEHEAD)—No. 775
MINEHEAD; INFERNO; BALKAN
40-75,000
Robb—Sec. 14; Tp. 49; R. 21; W. of 5th.
Val d'Or—Saunders Formation

Lump (2)	Egg (3)	Nut, Pea	Nut Slack
+ 1, 2, or 4	2 x 4, or 6	$1\frac{1}{4}$ x $2\frac{1}{2}$	0 x 1, $1\frac{1}{4}$
13	7	3	3
9·0	9·0	9·9	12·5
12·2	12·9	13·4	12·5
33·3	32·5	32·3	31·7
45·5	45·6	44·4	43·3
10,410	10,440	10,230	10,070
2165	2195	2180	2160
Weak agglomerate			
0			
0			
Negative			
61·1			
3·9			
0·7			
0·2	0·1	0·1	0·1
12·9			
10·0	10·0	10·0	10·0
10,295	10,325	10,185	10,360
High volatile C bituminous			
119—Lignitic			
54·2	47·6	50·4	51·5
36·9	42·0	39·7	38·8
46·0			

ALBERTA
Coalspur (District B)

CANADIAN COLLIERIES (DUNSMUIR) LTD. (4)
McLEOD RIVER—No. 846
McLEOD RIVER HARD
250-310,000
Mercoal—Sec. 25; Tp. 48; R. 22; W. of 5th.
Val d'Or—Saunders Formation

Lump	Egg	Nut	Stoker Pea	Slack
+4	2 x 5	1 x 2	$\frac{1}{4}$ x $\frac{3}{4}$	0 x 1, $1\frac{1}{2}$
8	2	2	7	2
8·5	8·5	8·5	8·5	10·0
9·2	12·2	12·1	11·9	11·9
35·0	32·9	33·9	34·3	32·7
47·3	46·4	45·5	45·3	45·4
11,180	10,720	10,680	10,775	10,475
2180	2205	2230	2245	2190
Weak agglomerate				
0				
0				
Negative				
64·4				
4·0				
0·8				
0·2	0·2	0·1	0·2	0·2
12·9				
8·2	8·2	8·2	8·2	8·2
11,215	10,755	10,715	10,810	10,685
High volatile C bituminous				
122—Subbituminous				
52·5	51·0	50·5	51·0	53·0
38·1	39·2	39·6	39·2	37·7
40·7				41·4

ANALYSES OF ASH— (McLeod River Hard)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	45·9	16·2	4·2	22·4	2·6	0·1	1·2	1·2	0·1	0·4	3·1

REMARKS—

(1) Not listed since 1949.

(2) Lump—most commonly prepared as + 2 in.; the + 4 in. or 4 x 8 in. sometimes called "cobble". Also prepared + 1 in. lump.

(3) Egg—Usually prepared as 2 x 4 in. Referred to as "stove" when 1 x 4 in.

(4) Formerly McLeod River Hard Coal Co., (1941) Ltd.

Province	ALBERTA
Area	**Coalspur (Districts B & C)**
Operator	STERLING—COAL VALLEY MINING CO. LTD., (1)
Mine	No. 1002 (COAL VALLEY); No. 769 (STERLING) (2)
Trade name	**COVA (No. 1002); STERLING (No. 769)**
Output.....approx. tons/annum	250-350,000
Location of Mine	Cova—Sec. 25; Tp. 47; R. 20; W. of 5th.; Sterling—Sec. 16; Tp. 47; R. 19; W. of 5th.
Seam and Formation	Mynheer Seam—Saunders Formation

Size	Mine Run(3)	Lump, Cobble	Stoker, Nut, Pea (4)	Slack
Screen limits at mine.....in.	¼ x 6	1½, 2¼ x 6	⅛, ¼ x ⅝, 1¼	0 x ⅝
No. of samples	15	16	36	4
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	8·0	8·0	8·0	8·5
Ash.....%	13·7	14·0	16·2	18·1
Volatile matter.....%	31·7	32·6	31·4	30·2
Fixed carbon.....%	46·6	45·4	44·4	43·2
Calorific value (As received).....B.t.u./lb.	10,500	10,385	10,190	9,865
Ash softening temperature.....°F.	2520	2275	2510	2615
Caking Properties—				
Volatile matter residue—950°C	Weak agglomerate			
Caking index (Gray)	0			
Swelling Properties—				
Swelling index (A.S.T.M.)	0			
Swelling index (F.R.L.)	Negative			
Ultimate Analysis (As received)—				
Carbon.....%	61·2			
Hydrogen.....%	3·9			
Nitrogen.....%	0·9			
Sulphur.....%	0·3	0·3	0·3	0·3
Oxygen.....%	12·0			
Analyses for Classification—				
Capacity moisture.....%	8·3	8·3	8·3	8·3
B.t.u./lb.....(capacity moisture basis)	10,465	10,350	10,155	9,885
Classification by Rank—				
A.S.T.M.	High volatile C bituminous			
S.V.I.	123—Border of Lignitic and Subbituminous			
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	55·8	53·0	49·8	53·5
cu. ft./ton	35·8	37·7	40·2	37·4
Grindability index	54·3			63·9

ANALYSES OF ASH— (Cova No. 1002 and Sterling No. 769)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	61·2	23·2	3·9	7·1	1·1	0·03	—	0·6	0·13	0·8	2·2

REMARKS—

(1) Until 1952 listed separately as Coal Valley Mining Co. Ltd., and Sterling Collieries Co. Ltd. Coal Valley tipple equipped with both wet and dry cleaning machines, and Sterling tipple with dry cleaning equipment.

(2) Strip operations.

(3) Railway coal—crushed and screened mine run.

(4) Nut—⅝ x 1¼ in.; Pea—⅛ or ¼ x ⅝ in.; mixture is "stoker" size.

ALBERTA **Crowsnest** GENERAL (1) (1) 2,000,000-2,500,000 Tps. 6 to 8; R. 2 to 4; W. of 5th. No. 1, No. 2, and No. 4;—Kootenay Formation	ALBERTA **Crowsnest (District C)** COLEMAN COLLIERIES LTD. MAPLE LEAF—No. 133 (3) (4) **HILLCREST—MOHAWK** 300,000-450,000 Bellevue—Tp. 7; R. 3; W. of 5th. No. 2—Kootenay Formation

Mine Run	Lump	Egg, Stove, Nut, Pea	Slack	Mine Run	Lump (5)	Nut, Pea, Stoker	Slack
	(See individual Mines)				+ 1¾	(6)	0 x 1⅝
102	17	59	48	1	4	5	8
2·5	1·3	1·7	3·1	1·5	1·0	1·5	2·5
15·3	14·0	12·1	14·4	16·5	17·0	14·3	14·9
24·8	26·0	26·1	24·2	25·6	26·7	26·3	25·3
57·4	58·7	60·1	58·3	56·4	55·3	57·9	57·3
12,425	12,850	13,000	12,460	12,250	12,225	12,630	12,385
2850+	2750	2850+	2850+	2850+	2850+	2850+	2850+
	Fair to Good		Fair	Fair	Fair to Good	Good	Fair
	27-40			27			
	1-5·5 0-500 (2)				1 40 (7)		
71·6				70·6			
4·3				4·3			
1·1				1·1			
0·6	0·7	0·6	0·6	0·6	0·7	0·5	0·5
4·6				5·4			
	Medium volatile bituminous 165—E Parabituminous				Medium volatile bituminous 159—D Parabituminous		
57·5	54·0	50·0-57·5	56·0	59·0	53·0	54·6	54·6
34·8	37·0		35·7	33·9	37·7	36·6	36·6
60-78			66-83	67·8			69·5

ANALYSES OF ASH— (Crownest—General)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	52·6	30·4	6·8	3·8	1·1	0·03	0·3	0·6	0·7	1·7	2·6

ANALYSES OF ASH— (Hillcrest—Mohawk)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	53·9	32·4	6·9	1·4	0·6	0·02	0·07	0·4	0·4	2·0	1·8

REMARKS—

(1) West Canadian Collieries Ltd.;—Bellevue, Adanac & Greenhill mines. Coleman Collieries Ltd.; previously: Hillcrest Mohawk Collieries Ltd.;—Maple Leaf mine. International Coal & Coke, Co., Ltd.;—Denison mine. McGillivray Creek Coal & Coke Co., Ltd.;—Carbondale mine. (2) There is some variation in the field; see individual mine results. (3) Until Jan. 1952, operated separately as Hillcrest Mohawk Collieries Ltd. Prior to incorporation with International and McGillivray Creek, mine No. 133 was closed and washery at Bellevue closed after merger. (4) Tent Mountain Strip Pit—mine No. 1695 was prepared at Bellevue tipple, being delivered to International and McGillivray Creek after Jan. 1952. This strip mine has been in operation since 1949 in Tp. 7; R. 6; W. of 5th. (5) Furnace Lump was 1⅝ x 4 in. (6) Nut, Pea—¼ or 1 x 1⅝ in.; Stoker—¼ x 1 in. (7) The unwashed high ash coal showed a negative swelling. The coal, washed down to a low ash content, exhibited a swelling index approaching 800.

Province	ALBERTA
Area	**Crowsnest (District A)**
Operator	COLEMAN COLLIERIES LTD. (1) (4)
Mine	DENISON—No. 88; No. 1695 (2)
Trade name	**INTERNATIONAL; TENT MOUNTAIN** (3)
Output.....approx. tons/annum	350-500,000
Location of Mine	No. 88 at Coleman—Sec. 8; Tp. 8; R. 4; W. of 5th.
Seam and Formation	No. 2 and No. 4 (No. 88 mine)—Kootenay Formation

	Mine Run	Furnace	Stoker	Slack
Size				
Screen limits at mine.....in.		1¼ x 5	¼ x 1¼	0 x 1¼
No. of samples	45	1	1	11
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	2·5	3·3	3·0	3·5
Ash.....%	14·5	12·5	12·6	14·2
Volatile matter.....%	24·7	27·1	24·9	23·8
Fixed carbon.....%	58·3	57·1	59·5	58·5
Calorific value (As received).....B.t.u./lb.	12,575	12,710	12,855	12,475
Ash softening temperature.....°F.	2450-2850+	2360	2730	2450-2850+
Caking Properties—				
Volatile matter residue—950°C.		Fair to Poor		
Caking index (Gray)		26·8 (5)		
Swelling Properties—				
Swelling index (A.S.T.M.)	1·5-4·0	3·9	2·5	1·5+
Swelling index (F.R.L.)				40 (6)
Ultimate Analysis (As received)—				
Carbon.....%	72·0			
Hydrogen.....%	4·3			
Nitrogen.....%	1·1			
Sulphur.....%	0·6	0·3	0·2	0·6
Oxygen.....%	5·0			
Analyses for Classification—				
Capacity moisture.....%				
B.t.u./lb.....(capacity moisture basis)				
Classification by Rank—				
A.S.T.M.		Medium volatile bituminous		
S.V.I.		167—E Parabituminous		
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	55·8	51·0	46·0	57·5
cu. ft./ton	35·8	39·2	43·5	34·8
Grindability index	81·0 (7)			83·0 (7)

ANALYSES OF ASH— (International)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	51·3	29·4	3·2	7·8	1·8	0·02	0·6	0·8	0·8	1·2	2·9

REMARKS—

(1) Prior to Jan. 1952 operated as International Coal & Coke Co. Ltd. (2) Mine No. 1695—strip pit in Tp. 7; R. 6; W. of 5th.; previously operated by Hillcrest Mohawk Collieries Ltd.; and trade named "Tent Mountain". Part of output delivered to International tipple and mixed with International output. (3) Since amalgamation no coal being sold as such though trade name has been registered. (4) Preparation plant includes wet and dry cleaning equipment. (5) Caking Index: No. 2 seam—33; No. 4 seam—20·5. (6) Swelling Index: No. 2 seam—116; No. 4 seam—41. (7) Grindability Index: No. 2 seam—79·6; No. 4 seam—83·2.

N.B.—Furnace and stoker analyses of 1953 samples. Samples of mine run and slack also taken in 1953 come within the range of analyses represented by the above average values. The Tent Mountain strip coal exhibits a lower free swelling index than do the underground coals.

ALBERTA
Crowsnest (District A)

COLEMAN COLLIERIES LTD. (1) (4)
CARBONDALE—No. 204; No. 1695 (2)
McGILLIVRAY CREEK; TENT MOUNTAIN (3)
175–275,000
No. 204 at Coleman—Sec. 17; Tp. 8; R. 4; W. of 5th.

No. 2 (No. 4 at times)—Kootenay Formation

Mine Run	Furnace	Stoker	Slack
	1¼ x 5	¼ x 1¼ sq.	0 x 1¼ sq.
22	11	8	6
3·0	2·0	3·0	3·5
15·0	12·7	14·0	14·7
24·7	26·3	25·2	24·0
57·3	59·0	57·8	57·8
12,405	12,940	12,595	12,300
2650–2850+	2750+	2650–2700	2650–2750+
	Fair to Poor		
	37		
4·5	3·5–5·5	4·5	
	430		
70·7			
4·1			
1·1			
1·0	1·2	1·0	0·8
5·1			
	Medium volatile bituminous		
	164—E Parabituminous		
58·5	52·5	50·0	56·8
34·2	38·1	40·0	35·2
80·1	78·4	77·8	83·4

ALBERTA
Crowsnest (District C)

WEST CANADIAN COLLIERIES LTD.
ADANAC (No. 9)—No. 1584 (5)
ADANAC
(6)
Near Bellevue—Sec. 31; Tp. 6; R. 3; W. of 5th.
No. 1—Kootenay Formation

Mine Run	Slack	Washed Slack
	0 x 1½	
3	1	1
	(7)	
2·5	2·5	2·5
19·6	20·2	13·0
24·0	23·5	24·3
53·9	53·8	60·2
11,530	11,415	12,740
2750+	2850	2850+
	Poor	
34		
0	0	0
—419		—303
67·1		
3·9		
0·9		
0·6	0·5	0·4
5·4		
Medium volatile bituminous		
167—E Parabituminous		
61·9	57·3	
32·3	34·9	
64·6	65·7	

ANALYSES OF ASH— (McGillivray Creek)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	53·9	27·1	10·5	1·8	0·9	0·3	0·4	0·9	0·6	1·6	1·1

ANALYSES OF ASH— (Adanac)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	54·6	32·1	2·7	3·5	1·1	—	0·3	0·5	0·5	1·9	3·0

REMARKS—
(1) Prior to Jan. 1952 operated as McGillivray Creek Coal & Coke Co. Ltd. (2) Mine No. 1695—strip pit in Tp. 7; R. 6; N. of 5th.; previously operated by Hillcrest Mohawk Collieries Ltd., and trade named "Tent Mountain". Part of output delivered to McGillivray tipple and mixed with McGillivray output. (3) Since amalgamation no coal being sold as such, though trade name has been registered. (4) Preparation plant includes wet and dry cleaning equipment. (5) This coal is prepared at Bellevue mine tipple. (6) This is from both underground and strip mines. (7) The analyses given are for coal collected for the Physical and Chemical Survey of Canadian Coals and does not represent marketed products. This was mainly strip coal and so it may be somewhat weathered.

N.B.—Samples of the various sizes received in 1953 from McGillivray Creek come well within the range of analyses represented by the above average values. The Tent Mountain strip coal exhibits a lower free swelling index than do the underground coals.

Province	ALBERTA
Area	**Crowsnest (District C)**
Operator	WEST CANADIAN COLLIERIES LTD.
Mine	BELLEVUE—No. 87 (1) (2)
Trade name	**BELLEVUE**
Output ..... approx. tons/annum	(See Greenhill Mines)
Location of Mine	Bellevue—Sec. 20; Tp. 7; R. 3; W. of 5th.
Seam and Formation	No. 1—Kootenay Formation.

Size	Mine Run	Lump (3)	Slack
Screen limits at mine ..... in.		+ 2 rd.	0 x 1¼ or 1¼ sq.
No. of samples	18	5	9
CHEMICAL PROPERTIES—			
Proximate Analysis (As received)—			
Moisture ..... %	3·0	1·5	3·5
Ash ..... %	16·9	14·0	14·2
Volatile matter ..... %	25·3	26·5	25·3
Fixed carbon ..... %	54·8	58·0	57·0
Calorific value (As received) ..... B.t.u./lb.	12,045	12,745	12,150
Ash softening temperature ..... °F.	2750+	2625	2785
Caking Properties—			
Volatile matter residue—950°C	Fair to Good	Good	Fair to Good
Caking index (Gray)		40	
Swelling Properties—			
Swelling index (A.S.T.M.)		1–4	
Swelling index (F.R.L.)		387	
Ultimate Analysis (As received)—			
Carbon ..... %	69·7		
Hydrogen ..... %	4·2		
Nitrogen ..... %	1·1		
Sulphur ..... %	0·5	0·7	0·4
Oxygen ..... %	4·6		
Analyses for Classification—			
Capacity moisture ..... %			
B.t.u./lb. ..... (capacity moisture basis)			
Classification by Rank—			
A.S.T.M.	Medium volatile bituminous		
S.V.I.	163—E Parabituminous		
PHYSICAL PROPERTIES—			
Bulk density ..... lb./cu. ft.	60·4	51·5	58·0
cu. ft./ton	33·1	38·8	34·5
Grindability index	60·5		66·3
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— (Bellevue)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	50·0	31·9	6·6	5·4	1·4	0·03	0·4	0·4	1·1	1·4	3·6

REMARKS—

(1) The preparation plant includes both wet and dry cleaning apparatus and a briquetting plant.

(2) Both under ground and strip mines.

(3) This includ Lump: + 6 in. rd.; and Washed Furnace: 2 x 6 in. rd.

ALBERTA

Crowsnest (District A)

WEST CANADIAN COLLIERIES LTD.

GREENHILL—No. 396 (1) (UNDERGROUND AND STRIP)

GREENHILL COAL; MONITOR BRIQUETTES

1,000,000-1,300,000 (2)

Blairmore—Sec. 2; Tp. 8; R. 4; W. of 5th.

No. 1 and No. 2—Kootenay Formation.

Mine Run	Lump	Stove (3)	Stoker, Nut	Slack	Briquettes (6)
	+ 1¼ sq.	2 x 5 rd.	(4)	(5)	2¼ x 2¼ x 1½ (2·4 oz.)
17	7	62	12	15	6
2·5	1·5	2·1	2·6	2·5	1·0
15·0	11·2	11·2	13·7	14·2	16·8
23·4	24·8	23·8	22·5	22·5	24·1
59·1	52·5	62·9	61·2	60·8	58·1
12,475	13,365	13,265	12,745	12,695	12,480
2700+	2555	2520	2750+	2750+	2750+
	Fair to Good	35	Fair	Fair	Poor
		1–5			
		490			
72·3					
4·3					
1·0					
0·5	0·5	0·5	0·4	0·4	0·5
4·4					
	Medium volatile bituminous				
	172—Orthobituminous				
58·5	57·5	49·7	50·0	53·0(7)	45·0
34·2	34·8	40·2	40·0	47·7	44·4
76·1				78·9	
					(8)
					73·0
					10·0
					95·7
					4·3
					1·27

ANALYSES OF ASH— (Greenhill Coal; Monitor Briquettes)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	53·1	32·3	6·0	3·0	0·9	0·01	—	0·7	0·7	1·5	2·2

REMARKS—

(1) The preparation plant includes wet and dry cleaning equipment as well as a briquetting plant.

(2) This is the output for all the West Canadian Collieries mines.

(3) Also known as 'washed furnace' and 'egg'.

(4) Size: ¼ x 1⅝ in. sq. Also called 'nut pea'.

(5) Size: 0 x 1⅝ in. sq.

(6) Commercial or domestic type briquettes.

(7) The bulk density of the slack varies from about 48 to 58 lb./cu. ft. depending largely on size distribution.

(8) See pages 8-9 for significance of tests on briquettes.

Province	ALBERTA
Area	**Crowsnest (District D)**
Operator	Wilson, B. A. (1)
Mine	Christie—No. 295
Trade name	**CHRISTIE**
Output.....approx. tons/annum	3-4,000
Location of Mine	Pincher Creek—Tp. 5; R. 1; W. of 5th.
Seam and Formation	7 Foot & 6 Foot—Kootenay Formation
Size	Mine Run
Screen limits at mine.....in.	
No. of samples	4
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	3·0
Ash.....%	13·0
Volatile matter.....%	31·5
Fixed carbon.....%	52·5
Calorific value (As received).....B.t.u./lb.	12,400
Ash softening temperature.....°F.	2200-2850+ (2)
Caking Properties—	
Volatile matter residue—950°C	Fair to Good
Caking index (Gray)	
Swelling Properties—	
Swelling index (A.S.T.M.)	
Swelling index (F.R.L.)	
Ultimate Analysis (As received)—	
Carbon.....%	71·2
Hydrogen.....%	4·3
Nitrogen.....%	1·0
Sulphur.....%	1·4
Oxygen.....%	6·1
Analyses for Classification—	
Capacity moisture.....%	
B.t.u./lb.....(capacity moisture basis)	
Classification by Rank—	
A.S.T.M	High volatile A bituminous
S.V.I	155—Subbituminous (agglomerating)
Physical Properties—	
Bulk density.....lb./cu. ft.	
cu. ft./ton	
Grindability index	

Remarks—

(1) Not listed since 1943 (formerly Great Northern Townsite Co.). Neumann Bros. (Alta. mine No. 1623) listed in 1947 near site of abandoned Christie mine.

(2) 7 Foot seam coal—F.P.A.: 2200° F.
6 Foot seam coal—F.P.A.: 2850+° F.

ALBERTA **Drumheller I (District A)**	ALBERTA **Drumheller II (Districts A & B)** **(Rosedale, Wayne & Willow Creek)**
GENERAL	GENERAL
(1)	(1)
—	—
450,000	600,000
Drumheller—Tp. 29; R. 20; W. of 4th	Drumheller—Tp. 29; R. 20; W. of 4th.; Rosedale, Wayne, Willow Creek—Tp. 28; R. 18, 19, 20; W. of 4th.
No. 1 (Lower)—Edmonton Formation.	No. 1 (Lower) & No. 5 (Upper)—Edmonton Formation.

Lump	Egg, Stove	Pea, Nut-Pea, Stoker	Slack	Lump	Egg, Stove	Nut, Pea, Stoker	Slack
+ 4½, 5 rd.	2, 3 x 4, 5 rd.	⅜, ¾ x 1¼, 1½ sq.	0 x ¾, 1½, 2 sq.	+ 4, + 5 rd.	2 x 4, 5 rd.	⅜, ¾, ⅝ x 1, 1½, 2 sq.	0 x ¾, 1, 1½, 2 sq.
16	13	43	8	65	64	83	28
16·0	16·0	16·0	17·0	17·0	17·0	17·0	18·0
6·8	8·5	11·8	12·0	7·3	8·1	13·4	12·6
31·1	30·5	29·3	28·9	31·1	30·5	28·1	28·2
46·1	45·0	42·9	42·1	44·6	44·4	41·5	41·2
10,180	9,965	9,530	9,235	9,900	9,785	9,000	8,940
2150	2270	2265	2300	2115	2145	2255	2195
Non-agglomerate				Non-agglomerate			
0				0			
0				0			
Negative				Negative			
58·6				57·2			
4·0				3·7			
1·1				1·3			
0·4	0·4	0·4	0·4	0·5	0·5	0·5	0·5
13·1				13·0			
18·0	18·0	18·0	18·0	18·3	18·3	18·3	18·3
9,940	9,730	9,305	9,125	9,745	9,630	8,860	8,910
Subbituminous B				Subbituminous B			
115—Lignitic				113—Lignitic			
53·2	49·3	45·0	53·1	50·7	48·5	45·6	50·7
37·6	40·6	44·4	37·7	39·4	41·2	43·9	39·5
37·1			37·4	38·7			35·7

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	0·18	4·0	0·9	1·5	0·5	3·7

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

Province	ALBERTA
Area	**Drumheller III (District C) (East Coulee, Willow Creek, N. Drumheller)**
Operator	GENERAL
Mine	(1)
Trade name	—
Output.....approx. tons/annum	630,000
Location of Mine	East Coulee and Willow Creek—Tp. 27, 28; R. 18, 19; W. of 4th. North Drumheller—Tp. 29; R. 30; W. of 4th.
Seam and Formation	No. 2, No. 7 and No. 1—Edmonton Formation.

Size	Lump	Stove, Egg	Nut Stoker	Nut Slack
Screen limits at mine.....in.	+2, 3, 4 or 5 rd.	2½ x 5 rd. (2)	⅜ x 1¼ sq.	0 x 1¼, 1½ sq.
No. of samples	34	21	22	20
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	18·0	18·0	18·0	19·0
Ash.....%	7·9	7·5	9·6	10·0
Volatile matter.....%	30·5	30·2	29·5	29·1
Fixed carbon.....%	43·6	44·3	42·9	41·9
Calorific value (As received).....B.t.u./lb.	9,580	9,645	9,300	9,160
Ash softening temperature.....°F.	2085	2060	2030	2075
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			
Ultimate Analysis (As received)—				
Carbon.....%	55·8			
Hydrogen.....%	3·8			
Nitrogen.....%	1·1			
Sulphur.....%	0·5	0·5	0·6	0·6
Oxygen.....%	12·9			
Analyses for Classification—				
Capacity moisture.....%	20·0	20·0	20·0	20·0
B.t.u./lb.....(capacity moisture basis)	9,345	9,410	9,075	9,050
Classification by Rank—				
A.S.T.M.	Subbituminous B			
S.V.I.	108—Lignitic			
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.		48·7	46·5	50·0
cu. ft./ton		41·1	43·0	40·0
Grindability index				36·3

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
%	40·8	19·1	12·4	7·4	1·5	0·4	4·3	1·2	0·5	0·5	8·0

REMARKS—

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

(2) Also smaller—1¾ x 4½ in., etc.

ALBERTA
Drumheller I (District A)

BRILLIANT COAL CO., LTD.,
BRILLIANT—No. 1258
BRILLIANT
90-110,000
Drumheller—Sec. 10; Tp. 29; R. 20; W. of 4th.

No. 1 (1)—Edmonton Formation.

D. S. lump(2)	Stove, Egg (3)	Nut, Pea	Slack
+ 5 rd.	3 x 5 rd.	$\frac{3}{4}$, 1 x $1\frac{3}{4}$ sq.	0 x $\frac{3}{4}$, 1 sq.
5	3	2	3
16·0	16·0	16·0	17·0
7·7	9·7	11·7	14·2
31·4	30·4	30·9	28·7
44·9	43·9	41·4	40·1
10,040	9,745	9,360	8,960
2210	2335	2300	2280
Non-agglomerate 0			
0 Negative			
58·0			
3·9			
1·1			
0·4	0·4	0·4	0·4
12·9			
18·6	18·6	18·6	18·6
9,730	9,440	9,075	8,790
Subbituminous B 115—Lignitic			
55·0	50·0	44·5	52·5
36·4	40·0	44·9	38·1
36·6			36·6

ALBERTA
Drumheller I (District A)

CENTURY COALS LIMITED (4)
COMMANDER—No. 422
COMMANDER
160-190,000
Drumheller—Sec. 9; Tp. 29; R. 20; W. of 4th.

No. 1—Edmonton Formation.

D.S. Lump	Stove	Nut Slack
+ $4\frac{1}{2}$ rd.	$1\frac{1}{2}$ x 4 rd.	0 x $1\frac{1}{2}$ sq.
2	2	2
16·0	16·0	17·0
6·9	7·5	10·6
31·0	30·8	29·2
46·1	45·7	43·2
10,090	9,980	9,360
2200	2290	2415
Non-agglomerate 0		
0 Negative		
59·1		
3·9		
1·1		
0·4	0·4	0·4
12·6		
18·0	18·0	18·0
9,845	9,740	9,250
Subbituminous B 113—Lignitic		
52·0	49·0	53·5
38·5	40·8	37·4
		42·5

ANALYSES OF ASH— (Brilliant)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	52·5	22·8	4·9	8·5	2·1	0·04	4·0	0·7	1·4	0·4	2·2

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) The upper bench of the seam consists of "granular" coal and in preparation is picked out and sold as + $1\frac{1}{2}$ in. "granular lump".
(2) D.S.—double screened.
(3) Stove is also $1\frac{3}{4}$ x 3 in.
(4) Previously Commander Coal Mine—Regal Coal Co., Limited.

Province	ALBERTA
Area	**Drumheller I (District A)**
Operator	THE ELGIN COAL CO., LTD. (1)
Mine	ELGIN (LOWER)—No. 819
Trade name	**ELGIN**
Output.....approx. tons/annum	20-30,000
Location of Mine	Drumheller—Tp. 29; R. 20, W. of 4th.
Seam and Formation	No. 1—Edmonton Formation

Size	Lump
Screen limits at mine.....in.	
No. of samples	2
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	16·0
Ash.....%	5·4
Volatile matter.....%	31·8
Fixed carbon.....%	46·8
Calorific value (As received).....B.t.u./lb.	10,350
Ash softening temperature.....°F.	1995
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
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·4
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	18·0
B.t.u./lb.....(capacity moisture basis)	10,105
Classification by Rank—	
A.S.T.M.	Subbituminous B
S.V.I.	115—Lignitic
PHYSICAL PROPERTIES—	
Bulk density.....lb./cu. ft. cu. ft./ton	
Grindability index	

REMARKS—

(1) Closed down since 1941.

ALBERTA
Drumheller I (District A)

RED DEER VALLEY COAL CO., LIMITED

RED DEER VALLEY—No. 402
GLOCOAL & "10-5"
150-200,000
Nacmine—Sec. 7; Tp. 29; R. 20; W. of 4th.
No. 1—Edmonton Formation

ALBERTA
Drumheller II (District B)

ARCADIA COAL MINES LTD. (SASK. FED. CO-OP'S. LTD.) (5)
ARCADIA—No. 1589
PURITY HARD
—
Willow Creek—Sec. 17; Tp. 28; R. 18; W. of 4th.
No. 1 (Bottom Bench)—Edmonton Formation

D.S. Lump (1)	Stove (2)	Nut, Pea (3)	Nut Slack (4)	D.S. Lump (6)	Stove (7)	Nut(8)	Slack
+5 rd.	2 x 5 rd.	⅜ x 2 rd.	0 x 2 rd.	+5 slot	2 x 5 slot	¾ x 2 sq.	0 x ¾, 1½ sq.
7	8	44	3	5	3	2	4
16·0	16·0	16·0	17·0	17·0	17·0	17·0	18·0
6·5	8·4	11·7	11·0	6·0	6·6	8·4	8·9
30·7	30·3	29·1	28·2	31·3	31·0	29·9	29·8
46·8	45·3	43·2	43·2	45·7	45·4	44·7	43·3
10,265	10,020	9,535	9,420	10,030	9,990	9,740	9,475
2135	2245	2265	2240	1980	1990	2065	2040
Non-agglomerate				Non-agglomerate			
0				0			
0				0			
Negative				Negative			
58·4				57·9			
4·1				3·6			
1·1				1·3			
0·4	0·4	0·4	0·4	0·6	0·6	0·6	0·6
13·5				13·6			
18·0	18·0	18·0	18·0	18·6	18·6	18·6	18·6
10,020	9,780	9,310	9,310	9,835	9,800	9,555	9,405
Subbituminous B				Subbituminous B			
115—Lignitic				112—Lignitic			
52·3	49·2	45·0	53·5		51·0		46·0
38·2	40·7	44·5	37·4		39·2		43·5
			35·1				35·4

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— (Purity Hard)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	47·6	16·8	5·0	10·3	1·8	0·02	5·6	0·7	0·8	0·4	9·9

REMARKS—

(1) Double screened; also single screened (+1¼ in. sq.). (2) Also known as egg and may be 2 x 6 rd., or 2 x 3 rd. (3) Nut-Pea referred to as "stoker" size: Large Stoker (Nut)—1¼ x 2 in.; Small Stoker (Pea)—⅜ x 1¼ in. (4) Also 0 x ¾ in. and 0 x 1¼ in. slack produced. Preparation plant includes dry cleaners (Birtley) for the nut and pea sizes. (5) Listed as Empire Collieries Ltd., until 1944. Mine not listed in 1951, no production since 1950. (6) Also single screened lump— +1½ in. (7) Also called egg and may be 2 x 3 in. or 2 x 4 in. (8) Other sizes prepared: Stoker or Pea—⅝ x 1¼ in. sq.

Province	ALBERTA
Area	**Drumheller II (District B)**
Operator	Ideal Coal Co., Ltd. (1)
Mine	Ideal—No. 844
Trade name	**IDEAL**
Output.....approx. tons/annum	20-30,000
Location of Mine	Wayne—Sec. 1; Tp. 28; R. 20; W. of 4th.
Seam and Formation	No. 1—Edmonton Formation

	Lump (2)	Stove	Nut Slack
Size			
Screen limits at mine.....in.	+ 4 bar	¾ slot x 4 bar	0 x ⅝, ½ slot
No. of samples	4	1	1
Chemical Properties—			
Proximate Analysis (As received)—			
Moisture.....%	17·0	17·0	18·0
Ash.....%	8·3	7·1	10·9
Volatile matter.....%	31·1	31·4	29·9
Fixed carbon.....%	43·6	44·5	41·2
Calorific value (As received).....B.t.u./lb.	9,815	9,965	9,100
Ash softening temperature.....°F.	2225	2190	2220
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	
Ultimate Analysis (As received)—			
Carbon.....%			
Hydrogen.....%			
Nitrogen.....%			
Sulphur.....%	0·5	0·5	0·4
Oxygen.....%			
Analyses for Classification—			
Capacity moisture.....%	18·6	18·6	18·6
B.t.u./lb.....(capacity moisture basis)	9,625	9,770	9,035
Classification by Rank—			
A.S.T.M		Subbituminous B	
S.V.I		114—Lignitic	
Physical Properties—			
Bulk density.....lb./cu. ft.	52·3	50·5	53·5
cu. ft./ton	38·2	39·6	37·4
Grindability index			

Remarks—

(1) Closed for several years and reopened in 1941. Last listed in 1947.

(2) Also Furnace Lump: + 2 in. bar.

ALBERTA
Drumheller II (District A)

MIDLAND COAL MINING CO., LTD.
MIDLAND AND MERCURY—No. 367
MIDLAND; MERCURY
100–160,000
Midlandvale—Sec. 9; Tp. 29; R. 20; W. of 4th.

No. 1—Edmonton Formation

Lump (1)	Egg, Stove	Nut	Nut Pea (2) (Stoker)	Slack
+ 5 rd.	2 x 6 rd., 1 x 5 rd.	$\frac{15}{16}$ x $1\frac{3}{16}$	$\frac{3}{8}$ x $1\frac{1}{2}$ rd.	0 x $1\frac{1}{2}$ rd.
7	7	3	11	2
17·0	17·0	17·0	17·0	18·0
7·6	6·6	8·1	12·0	13·9
30·4	30·4	29·8	29·1	27·4
45·0	46·0	45·1	41·9	40·7
9,875	10,015	9,815	9,310	8,860
2130	2100	2170	2290	2330
Non-agglomerate 0				
0 Negative				
57·0				
3·7				
1·3				
0·4	0·4	0·4	0·4	0·4
13·0				
18·0	18·0	18·0	18·0	18·0
9,755	9,895	9,695	9,200	8,860
Subbituminous B 110—Lignitic				
	47·4	47·2		50·0
	42·2	42·4		40·0
				36·7

ALBERTA
Drumheller II (District A)

NEWCASTLE COLLIERIES LTD. (3)
NEWCASTLE—No. 620
NEWCASTLE (A.B.C.)
30–100,000
Drumheller—Sec. 3; Tp. 29; R. 20; W. of 4th.

No. 1—Edmonton Formation

D. S. Lump (4)	Egg, Stove	Stoker	Nut Slack
+ 5 rd.	$2\frac{1}{2}$ x $5\frac{1}{2}$ rd. $1\frac{1}{2}$ bar x $2\frac{1}{2}$ rd.	$\frac{3}{8}$ x $1\frac{1}{2}$ bar	0 x $1\frac{1}{2}$ bar
5	14	32	2
17·0	17·0	17·0	18·0
8·0	10·2	12·0	12·1
30·9	29·7	28·8	28·0
42·1	43·1	42·2	41·9
9,815	9,400	9,300	9,050
2250	2160	2280	2280
Non-agglomerate 0			
0 Negative			
56·7			
3·7			
1·2			
0·4	0·5	0·5	0·4
13·0			
18·0	18·0	18·0	18·0
9,700	9,285	9,190	9,050
Subbituminous B 107—Lignitic			
	50·0	44·5	52·0
	40·0	44·9	38·5
39·3			36·3

ANALYSES OF ASH— (Midland; Mercury)

	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

ANALYSES OF ASH— (Newcastle, A.B.C.)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	54·8	23·2	4·8	7·0	2·2	0·03	3·9	0·7	1·0	0·4	1·5

REMARKS—

(1) Other sizes prepared—Lump $4\frac{1}{2}$ or 5 x 10 in.
(2) Nut Pea may be 1 x $1\frac{3}{4}$ in., and Stoker may be $\frac{5}{8}$ x $\frac{5}{16}$ in.
(3) Not listed since 1951.
(4) Other sizes prepared: Range-Nut $1\frac{1}{2}$ x $2\frac{1}{2}$ in. Slack 0 x $\frac{3}{4}$ in. sq.

Province	ALBERTA
Area	**Drumheller II (District B)**
Operator	Rosedale Collieries Ltd.
Mine	Rosedale—No. 346; Star—No. 436(1)
Trade name	**ROSEDALE; STAR**
Output.....approx. tons/annum	Rosedale 85-120,000; Star 40-90,000
Location of Mine	Rosedale—Sec. 28; Tp. 28; R. 19; W. of 4th.—Rosedale Star—Sec. 28; Tp. 28; R. 19; W. of 4th.—Ariel
Seam and Formation	No. 1—Edmonton Formation

Size	D.S. Lump	Granular Lump (2)	Egg, Stove (3)	Pea	Nut Slack
Screen limits at mine.....in.	+4 rd.	+4 rd.	2¼ x 4, 5 rd.	(4)	0" x 1" sq.
No. of samples	28	10	31	34	2
Chemical Properties—					
Proximate Analysis (As received)—					
Moisture.....%	17·0	17·0	17·0	17·0	18·0
Ash.....%	7·2	12·5	7·7	15·7	11·0
Volatile matter.....%	31·2	29·1	30·7	27·6	29·1
Fixed carbon.....%	44·6	41·4	44·6	39·7	41·9
Calorific value (As received).....B.t.u./lb.	9,950	9,235	9,920	8,740	9,220
Ash softening temperature.....°F.	2100	2270	2100	2250	2175
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		
Ultimate Analysis (As received)—					
Carbon.....%	57·5				
Hydrogen.....%	3·9				
Nitrogen.....%	1·3				
Sulphur.....%	0·5	0·5	0·6	0·5	0·6
Oxygen.....%	12·6				
Analyses for Classification—					
Capacity moisture.....%	18·6	18·6	18·6	18·6	18·6
B.t.u./lb.....(capacity moisture basis)	9,760	9,060	9,730	8,575	9,155
Classification by Rank—					
A.S.T.M			Subbituminous B		
S.V.I			116—Lignitic		
Physical Properties—					
Bulk density.....lb./cu. ft.	50·5	52·3	48·0	46·5	54·0
cu. ft./ton	39·6	38·2	41·7	43·0	37·0
Grindability index	39·0				34·7

Analyses of Ash— (Rosedale; Star)

	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) Rosedale mine closed in 1952. This company is a subsidiary of Great West Coal Co. Ltd., Winnipeg, Man.

(2) All samples are from Rosedale mine No. 346.

(3) Also Stove Nut: 1½ x 4 in. rd.

(4) Stoker—⅝ x 1 in. sq.; Range (Nut) —1 x 2¼ in. Analysis similar to stoker.

ALBERTA **Drumheller II (District A)** SASKATCHEWAN FEDERATED CO-OPS. LTD. (1) HY-GRADE—No. 1421 **HY-GRADE** 90-120,000 Drumheller—Sec. 11; Tp. 29; R. 20; W. of 4th.			ALBERTA **Drumheller II (District B)** SUPERIOR GRADE COAL CO., LTD. (4) SUNSHINE—No. 737 **SUNSHINE** 10-20,000 Wayne—Sec. 19; Tp. 28; R. 19; W. of 4th.
No. 1—Edmonton Formation			No. 1—Edmonton Formation
(3) D.S. Lump (2)	Stove, Egg	Nut Slack	Lump
+5½ rd.	2½ x 5½ rd.	0 x 1½ bar	
3	2	2	2
17·0	17·0	18·0	17·0
6·8	7·8	10·3	5·3
31·1	30·6	29·1	31·1
45·1	44·6	42·6	46·6
10,035	9,870	9,320	10,420
2150	2300	2210	1960
	Non-agglomerate 0		Non-agglomerate 0
	0 Negative		0 Negative
58·3			
3·5			
1·2			
0·4	0·4	0·5	0·5
12·8			
18·0	18·0	18·0	18·6
9,915	9,750	9,320	10,220
	Subbituminous B 113—Lignitic		Subbituminous B 120—Lignitic
52·0	49·5	56·0	
38·5	40·4	35·7	
35·2		34·9	

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

REMARKS—

(1) Formerly Hy-Grade Coal Mining Co., Ltd.

(2) Double screened.

(3) Other sizes produced—Single screened lump (Mine Run): +1⅜ in. lip; Nut: ¾ x 1⅜ in. lip; Pea (Stoker): ¾ in. sq. x ¾ in. lip.

(4) Closed down since 1941 but in 1952 a new mine was listed as Joy Coal Co., mine No. 1669, trade name "Sunshine" located in Sec. 18; Tp. 28; R. 19; W. of 4th. with about 10,000 ton annual production.

Province	ALBERTA
Area	**Drumheller II (District A)**
Operator	WAYNE COAL PRODUCERS ASSN. LTD. (1)
Mine	MUTUAL—No. 703
Trade name	**MUTUAL**
Output.....approx. tons/annum	20-30,000
Location of Mine	Wayne—Sec. 7; Tp. 28; R. 19; W. of 4th.
Seam and Formation	No. 5—Edmonton Formation

	D. S. Lump	Stove	Nut Slack
Size			
Screen limits at mine.....in.	+ 4 rd.	2 x 4½ rd.	0 x 2 rd.
No. of samples	4	2	1
CHEMICAL PROPERTIES—			
Proximate Analysis (As received)—			
Moisture.....%	17·0	17·0	18·0
Ash.....%	7·5	7·9	16·0
Volatile matter.....%	31·3	32·4	27·3
Fixed carbon.....%	44·2	42·7	38·7
Calorific value (As received).....B.t.u./lb.	9,920	9,810	8,490
Ash softening temperature.....°F.	2145	2280	2320
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	
Ultimate Analysis (As received)—			
Carbon.....%			
Hydrogen.....%			
Nitrogen.....%			
Sulphur.....%	0·5	0·5	0·5
Oxygen.....%			
Analyses for Classification—			
Capacity moisture.....%	18·8	18·8	18·8
B.t.u./lb.....(capacity moisture basis)	9,700	9,600	8,405
Classification by Rank—			
A.S.T.M		Subbituminous B	
S.V.I		114—Lignitic	
PHYSICAL PROPERTIES—			
Bulk density.....lb./cu. ft.		48·5	51·0
cu. ft./ton		41·2	39·2
Grindability index			

REMARKS—

(1) Abandoned in 1941. In 1952 Wayne Coals Ltd., mine No. 1570, trade named "Sovereign", with a production of about 11,000 tons per annum was listed. This mine is in Sec. 7; Tp. 28; R. 19; W. of 4th.; close to where mine No. 703 operated.

ALBERTA
Drumheller II (District B)

WESTERN GEM & JEWEL COLLIERIES LTD. (1)
CAMBRIAN—No. 1493

NEW WESTERN GEM; NEW JEWEL; CAMBRIAN
20-90,000
Cambria—Sec. 15; Tp. 28; R. 19; W. of 4th.
No. 1—Edmonton Formation

(2) D. S. Lump	Stove, Egg	Nut Pea	Stoker	Nut Slack
+ 5 rd.	2, 2½ x 5 rd.	⅝ sq. x 2 rd.	⅝ x 1 sq.	0 x 2½ rd.
5	2	1	1	11
17·0	17·0	17·0	17·0	18·0
6·8	5·7	5·5	7·7	14·8
31·4	31·9	30·4	30·4	28·2
44·8	45·4	47·1	44·9	39·0
10,000	10,070	10,010	9,660	8,605
2045	1970	2000	2060	2310
Non-agglomerate				
0				
0				
Negative				
0·4	0·4	0·5	0·5	0·5
18·6	18·6	18·6	18·6	18·6
9,805	9,880	9,820	9,470	8,540
Subbituminous B				
113—Lignitic				
	47·7	47·0	47·0	48·0
	41·9	42·6	42·6	41·7

ALBERTA
Drumheller III (District B)

AETNA COALS LTD.
AETNA—No. 1511 (UNDERGROUND AND STRIP)
AETNA
18-25,000
Cambria—Sec. 22; Tp. 28; R. 19; W. of 4th.
No. 1—Edmonton Formation

D. S. Lump	Stove	Nut Slack
+ 4 rd.	1¾ sq. x 4½ rd.	0 x 1¾ sq.
2	1	1
18·0	18·0	19·0
7·5	8·0	11·9
30·5	30·4	28·3
44·0	43·6	40·8
9,680	9,655	8,990
2025	2060	2120
Non-agglomerate		
0		
0		
Negative		
0·7	0·6	0·7
18·6	18·6	18·6
9,610	9,585	9,030
Subbituminous B		
109—Lignitic		
	48·0	55·5
	41·7	36·0

REMARKS—
(1) Last listed in 1950.
(2) In addition to above sizes: Cobble—5 x 10 in., was also prepared.

Province	ALBERTA
Area	**Drumheller III (District C)**
Operator	Century Coals Ltd. (1)
Mine	Atlas—No. 1484
Trade name	**REGAL; WILDFIRE**
Output.....approx. tons/annum	150–225,000
Location of Mine	East Coulee—Sec. 21, Tp. 27; R. 18; W. of 4th.
Seam and Formation	No. 2 (East Coulee)—Edmonton Formation

	(2) D.S. Lump	Egg (3)	Nut Pea	Stoker	Slack
Size					
Screen limits at mine.....in.	+ 5 rd.	2½ x 5 rd.	1 x 2 rd.	⅜ x 1 rd.	0 x ¾, 1½
No. of samples	10	4	1	1	4
Chemical Properties—					
Proximate Analysis (As received)—					
Moisture.....%	18·0	18·0	18·0	18·0	19·0
Ash.....%	7·4	7·1	8·1	8·3	9·0
Volatile matter.....%	30·9	30·3	30·9	29·8	29·1
Fixed carbon.....%	43·7	44·6	43·0	43·9	42·9
Calorific value (As received).....B.t.u./lb.	9,590	9,790	9,415	9,395	9,205
Ash softening temperature.....°F.	2065	2090	2060	2010	2015
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				
Ultimate Analysis (As received)—					
Carbon.....%	56·1				
Hydrogen.....%	3·7				
Nitrogen.....%	1·2				
Sulphur.....%	0·5	0·5	0·7	0·6	0·6
Oxygen.....%	13·1				
Analyses for Classification—					
Capacity moisture.....%	20·0	20·0	20·0	20·0	20·0
B.t.u./lb.....(capacity moisture basis)	9,355	9,550	9,185	9,165	9,090
Classification by Rank—					
A.S.T.M	Subbituminous B				
S.V.I	106—Lignitic				
Physical Properties—					
Bulk density.....lb./cu. ft.		49·0	47·5		47·5
cu. ft./ton		40·8	42·1		42·1
Grindability index					37·3

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
%	26·7	13·1	25·7	10·0	2·1	0·9	4·7	0·9	0·6	0·4	12·6

Remarks—

(1) Previously Regal Coal Co., Ltd.—Atlas Coal mine.

(2) In addition to above sizes the following also are prepared: Sized Lump— 6 x 12 in; Grate Coal —6 x 9 in; Nut—2 x 2½ in. rd.

(3) Egg may be 2½ x 4 in. rd. Also called Stove size.

ALBERTA
Drumheller III (District C)

COMET COAL CO., LTD. (1)
COMET—No. 675
COMET
20-30,000
East Coulee—Sec. 28; Tp. 27; R. 18; W. of 4th.
No. 2 (East Coulee)—Edmonton Formation

D. S. Lump	Nut Slack
+ 2¾ bar	0 x 2¾ bar
1	1
18·0	19·0
7·7	8·7
30·7	23·9
43·6	43·4
9,485	9,270
2070	2140
Non-agglomerate	
0	
0	
Negative	
0·7	0·8
20·0	20·0
9,250	9,155
Subbituminous B	
104—Lignitic	
	52·5
	38·1

ALBERTA
Drumheller III (District C)

MAPLE LEAF COAL CO., LTD. (2)
MAPLE LEAF—No. 728
NATIONAL
12-35,000
Lehigh—Sec. 32; Tp. 27; R. 18; W. of 4th.
No. 2 (East Coulee)—Edmonton Formation

D. S. Lump	Stove, Egg	Nut, Stoker (3)	Nut Slack
+ 5 rd.	2½ x 5 rd.	⅜ x 1½ sq.	0 x 1¾ rd.
4	1	2	1
18·0	18·0	18·0	19·0
7·2	7·7	10·1	8·8
30·8	30·1	29·0	29·8
44·0	44·2	42·9	42·4
9,550	9,535	9,170	9,355
2010	1900	2040	1870
Non-agglomerate			
0			
0			
Negative			
0·5	0·4	0·5	0·7
20·0	20·0	20·0	20·0
9,315	9,300	8,945	9,240
Subbituminous B			
104—Lignitic			
	50·0		53·0
	40·0		37·7

REMARKS—
(1) Not listed since 1942.
(2) Last listed in 1951. Previously listed as Maple Leaf Minerals Ltd.
(3) Samples of Nut Stoker in 1944. Analyses of other sizes from samples prior to 1941.

Province	ALBERTA
Area	**Drumheller III (District A)**
Operator	The Minute Coal Co.
Mine	Minute—No. 1520
Trade name	**GOOD QUALITY**
Output.....approx. tons/annum	10–20,000
Location of Mine	Drumheller North—Sec. 14; Tp. 29; R. 20; W. of 4th.
Seam and Formation	No. 7—Edmonton Formation.

	Lump	Stove	Nut	Slack
Size				
Screen limits at mine.....in.	+ 3½ bar	2 rd. x 3½ bar	⅝ x 2 rd.	0 x ⅝ rd.
No. of samples	5	3	1	4
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	18·0	18·0	18·0	19·0
Ash.....%	11·0	9·3	11·5	12·2
Volatile matter.....%	28·7	28·9	28·6	27·6
Fixed carbon.....%	42·3	43·8	41·9	41·2
Calorific value (As received).....B.t.u./lb.	9,230	9,635	9,090	8,850
Ash softening temperature.....°F.	2365	2275	2330	2300
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		
Ultimate Analysis (As received)—				
Carbon.....%	53·6			
Hydrogen.....%	3·7			
Nitrogen.....%	1·0			
Sulphur.....%	0·4	0·4	0·4	0·4
Oxygen.....%	12·3			
Analyses for Classification—				
Capacity moisture.....%	18·8	18·8	18·8	18·8
B.t.u./lb.....(capacity moisture basis)	9,140	9,540	9,000	8,870
Classification by Rank—				
A.S.T.M.		Subbituminous B		
S.V.I.		109—Lignitic		
Physical Properties—				
Bulk density.....lb./cu. ft.		49·5		48·5
cu. ft./ton		40·4		41·2
Grindability index				36·6

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
%	55·5	22·8	3·6	1·1	0·5	0·1	2·0	1·7	0·3	0·8	4·1

ALBERTA
Drumheller III (District C)

THE MONARCH COAL MINING CO., LTD.
WESTERN MONARCH—No. 1573 (1)
WESTERN MONARCH (2)
85–150,000
East Coulee—Sec. 20; Tp. 27; R. 18; W. of 4th.

No. 2 (East Coulee)—Edmonton Formation.

Lump	Stove	Nut	Nut Slack
+ 2 bar	1¼ sq. x 2 bar	⅝ x 1¼ sq.	0 x 1¼ sq.
4	2	2	3
18·0	18·0	18·0	19·0
7·7	7·7	10·9	10·3
31·3	31·1	30·1	29·8
43·0	43·2	41·0	40·9
9,590	9,515	9,110	9,085
2070	2100	2160	2105
Non-agglomerate			
0			
0			
Negative			
56·3			
3·8			
1·1			
0·8	0·8	0·7	0·9
12·3			
20·0	20·0	20·0	20·0
9,355	9,280	8,885	8,970
Subbituminous B			
105—Lignitic			
	46·8		51·0
	42·7		39·2
			35·4

ALBERTA
Drumheller III (District C)

MURRAY COLLIERIES LTD.
NEW MURRAY—No. 1491
NEW MURRAY
150–195,000
East Coulee—Sec. 29; Tp. 27; R. 18; W. of 4th.

No. 2 (East Coulee)—Edmonton Formation.

D.S. Lump	Egg or Stove and Nut	Stoker Nut	Nut Slack
+ 5 rd. (3)	(4)	⅜ x 1¼ sq.	0 x 1¼ sq.
5	8	16	7
18·0	18·0	18·0	19·0
7·0	7·8	10·2	9·8
31·1	30·8	29·3	29·4
43·9	43·4	42·5	41·8
9,685	9,540	9,195	9,150
1990	1985	2070	2020
Non-agglomerate			
0			
0			
Negative			
56·7			
3·7			
1·1			
0·6	0·5	0·6	0·6
13·0			
20·0	20·0	20·0	20·0
9,445	9,310	8,970	9,035
Subbituminous B			
105—Lignitic			
	49·0	46·5	50·0
	40·8	43·0	40·0
			37·0

ANALYSES OF ASH— (Western Monarch)

	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

ANALYSES OF ASH— (New 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) Listed as Western Monarch in 1947. Apparently the old Western Monarch mine at Drumheller closed down and the name was transferred to the new Western Crown mine at East Coulee.
(2) Previous to 1947 called Western Crown.
(3) In addition to the above the following size is prepared: Lump or Cobble—5 or 6 x 12 in.
(4) Egg or Stove—2½ x 5 in. rd.
Nut—1¼ in. sq. x 2½ in. rd.

Province	ALBERTA
Area	**Drumheller III (District C)**
Operator	Saskatchewan Federated Co-Ops., Ltd. (1)
Mine	Empire—No. 1299
Trade name	**EMPIRE**
Output.....approx. tons/annum	40-70,000
Location of Mine	East Coulee—Sec. 32; Tp. 27; R. 18; W. of 4th.
Seam and Formation	No. 2 (East Coulee)—Edmonton Formation

Size	(2) D.S. Lump	Stove, Egg	Slack
Screen limits at mine.....in.	+ 5 x 12 sl.	2⅝ by 5 x 12 sl.	0 x ¾ sq.
No. of samples	3	2	1
Chemical Properties—			
Proximate Analysis (As received)—			
Moisture.....%	18·0	18·0	19·0
Ash.....%	6·8	7·6	8·3
Volatile matter.....%	30·6	30·7	29·2
Fixed carbon.....%	44·6	43·7	43·5
Calorific value (As received).....B.t.u./lb.	9,700	9,605	9,310
Ash softening temperature.....°F.	1900	2005	1970
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	
Ultimate Analysis (As received)—			
Carbon.....%			
Hydrogen.....%			
Nitrogen.....%			
Sulphur.....%	0·5	0·5	0·5
Oxygen.....%			
Analyses for Classification—			
Capacity moisture.....%	20·0	20·0	20·0
B.t.u./lb.....(capacity moisture basis)	9,465	9,370	9,195
Classification by Rank—			
A.S.T.M.		Subbituminous B	
S.V.I.		107—Lignitic	
Physical Properties—			
Bulk density.....lb./cu. ft.		46·0	51·0
cu. ft./ton		43·5	39·2
Grindability index			

Remarks—
(1) Prior to 1946 known as the Empire Collieries Ltd. Not listed in 1953.
(2) Other sizes prepared: Stoker or Pea—⅝ or ¾ x 1¼ in. sq. Nut—1¼ x 2 in. sq.

ALBERTA
Edmonton

GENERAL
(1)*

—

250-350,000 (2)
Tps. 51 to 55; R. 23 to 26; W. of 4th.

Clover Bar (No. 4)—Edmonton Formation

Lump	Stove, Egg	Nut	Pea, Stoker	Slack
(3)	(4)	(5)	(6)	(7)
30	12	6	4	13
21·5	21·5	21·5	21·5	21·5
7·7	7·7	10·1	10·8	11·1
28·7	29·0	27·8	27·2	27·4
42·1	41·8	40·6	40·5	40·0
8,920	9,025	8,675	8,620	8,495
2125	2205	2295	2290	2305
Non-agglomerate				
0				
0				
Negative				
52·6				
3·4				
1·0				
0·4	0·4	0·4	0·4	0·4
13·4				
25·3	25·3	25·3	25·3	25·3
8,490	8,590	8,255	8,200	8,085
Subbituminous C				
104—Lignitic				
50·4	46·8	46·4	43·9	48·9
39·7	42·7	43·1	45·6	40·9
				37·1

ALBERTA
Edmonton (District A)

BANNER COALS LTD. (8)
PENN—No. 428 (UNDERGROUND); No. 1724 (STRIP) (9)
PENN COAL (BANNER)
15-25,000
Carbondale (Sturgeon Valley)—Sec. 8; Tp. 55; R. 24; W. of 4th.

Clover Bar (No. 4)—Edmonton Formation.

Lump	Stove	Nut	Pea	Slack
			$\frac{3}{4}$ x	
+ 4 rd.	2 x 4 rd.	$1\frac{1}{8}$ x 2 rd.	$1\frac{1}{8}$ sq.	0 x $\frac{3}{4}$ sq.
3	1	1	1	2
21·5	21·5	21·5	21·5	21·5
7·7	8·3	10·2	10·3	12·5
28·2	27·3	27·9	26·8	26·2
42·6	42·9	40·4	41·4	39·8
9,040	8,940	8,630	8,725	8,365
2095	2190	2240	2220	2270
Non-agglomerate				
0				
0				
Negative				
53·5				
3·4				
1·1				
0·4	0·4	0·4	0·4	0·4
12·4				
25·6	25·6	25·6	25·6	25·6
8,570	8,475	8,180	8,270	7,930
Subbituminous C				
103—Lignitic				
53·3	44·3	53·8	43·5	50·8
37·5	45·1	37·2	46·0	39·4
				36·8

ANALYSES OF ASH— (Edmonton: General)

	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

ANALYSES OF ASH— (Penn Coal)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	41·5	24·5	5·9	12·3	1·3	0·1	3·8	2·7	1·7	0·5	5·6

REMARKS—

(1) See "Coal Mines in Canada"—Publication No. 4-1, Mineral Resources Division, Mines Branch, Ottawa. (2) Approximately 150,000 tons in 1950 was strip coal. (3) Lump: +4, +5, +6 in. or larger, round hole or bar screen. (4) 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. (5) 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 $2\frac{1}{2}$ x 4 in. rd. (6) 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 $\frac{3}{8}$ x $\frac{3}{4}$ in. sq. (7) Slack varies from 0 x $\frac{1}{2}$ in. rd., sq., or bar screens to 0 x $1\frac{1}{2}$ in. (8) Controlled by Crown Coal Co., Ltd., Edmonton. (9) Operated as underground mine until 1951. In 1952 a strip pit mine No. 1724, was opened in Sec. 24, Tp. 55, R. 25, W. of 4th. the deep mine being closed down. No samples have been received from the strip pit.

*No commercial samples from Egg Lake Coal Co. (Tp. 56; R. 25)—third largest operator (approx. 50,000 tons/annum). Report on channel sample from Research Council of Alberta, 1952, showed following analysis: Moisture—25·0%; Ash—6·2%; Volatile matter—29·3%; Fixed carbon—39·5%; Calorific value—8,550 B.t.u./lb.

Province	ALBERTA
Area	**Edmonton (District B)**
Operator	Beverly Coal Co., Ltd. (1)
Mine	Beverly—No. 1366; No. 1627 (Strip)
Trade name	**BEVERLY**
Output.....approx. tons/annum	10-15,000
Location of Mine	Beverly—Sec. 13; Tp. 53; R. 24; W. of 4th.
Seam and Formation	Edmonton Formation

Size	Lump	Egg	Nut	Slack
Screen limits at mine.....in	+10 bar	4 x 6 rd.	2½ x 4 rd.	0 x 1 rd.
No. of samples	1	1	1	1
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	21·5	21·5	21·5	21·5
Ash.....%	5·3	7·0	8·5	9·4
Volatile matter.....%	28·4	28·7	28·9	27·9
Fixed carbon.....%	44·8	42·8	41·1	41·2
Calorific value (As received).....B.t.u./lb	9,245	8,990	8,825	8,670
Ash softening temperature.....°F	2130	2350	2430	2450
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		
Ultimate Analysis (As received)—				
Carbon.....%				
Hydrogen.....%				
Nitrogen.....%				
Sulphur.....%	0·4	0·3	0·3	0·3
Oxygen.....%				
Analyses for Classification—				
Capacity moisture.....%	25·0	25·0	25·0	25·0
B.t.u./lb.....(capacity moisture basis)	8,835	8,590	8,430	8,285
Classification by Rank—				
A.S.T.M.		Subbituminous C		
S.V.I.		97—Lignitic		
Physical Properties—				
Bulk density.....lb./cu. ft.	54·0	48·5	46·5	49·3
cu. ft./ton	37·0	41·2	43·0	40·6
Grindability index				

Remarks—

(1) Not listed in 1952. In 1953 strip mine No. 1627 listed in Sec. 17; Tp. 55; R. 24; W. of 4th. Apparently mine No. 1366 had also been converted to a strip operation prior to being closed down. Operator listed prior to 1952 as Beverly Coal Ltd. No samples from new mine.

ALBERTA **Edmonton (District A)** BUSH MINES LIMITED (1) BUSH—No. 701 **BUSH** 50-60,000 Edmonton Settlement—River Lot 40 Edmonton Formation			ALBERTA **Edmonton (District A)** DAWSON COAL LIMITED (3) DAWSON—No. 155 **DAWSON** 40-50,000 Rifle Range—River Lot 25 Edmonton Formation		
(2) Lump	Stove	Nut Slack	Lump	Egg	Slack
+4 bar	2½ rd. x 4 bar	0 x 1½ bar	+2¼ bar	¼ sq. x 2¼ bar	0 x ⅝ sq.
5	2	2	1	1	1
21·5	21·5	21·5	21·5	21·5	21·5
7·3	7·1	9·9	7·5	6·5	11·6
28·7	28·7	27·7	28·0	28·7	26·6
42·5	42·7	40·9	43·0	43·3	40·3
9,045	9,040	8,660	9,150	9,290	8,480
2100	2140	2270	2170	2040	2265
	Non-agglomerate 0			Non-agglomerate 0	
	0 Negative			0 Negative	
52·6 3·3 1·0 0·3 14·0	0·3	0·4	0·4	0·4	0·3
25·6	25·6	25·6	25·6	25·6	25·6
8,570	8,570	8,185	8,675	8,800	8,035
	Subbituminous C 103—Lignitic			Subbituminous C 104—Lignitic	
48·5	48·3	48·8		47·5	50·0
41·2	41·4	41·0		42·1	40·0

REMARKS—

(1) Not listed since 1944.

(2) Other sizes prepared: Nut—1½ x 2 in., or 3 in. rd.; Screened Mine Run—Mixed: (50% Lump, 50% Stove).

(3) Not listed since 1944.

Province	ALBERTA
Area	**Edmonton (District A)**
Operator	EDMONTON COLLIERIES LIMITED
Mine	NEW BLACK GEM—No. 1266
Trade name	**NEW BLACK GEM**
Output.....approx. tons/annum	25–35,000
Location of Mine	Namao—Sec. 36; Tp. 54; R. 25; W. of 4th.
Seam and Formation	No. 4 (Upper)—Edmonton Formation

Size	Egg	Nut	Pea	Slack
Screen limits at mine.....in.	2½ x 4 rd.	1⅛ sq. x 2½ rd.	½ x 1⅛ sq.	0 x ½ sq.
No. of samples	2	1	1	2
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	21·5	21·5	21·5	21·5
Ash.....%	8·4	8·2	9·5	12·2
Volatile matter.....%	29·4	29·8	28·7	28·2
Fixed carbon.....%	40·7	40·5	40·3	38·1
Calorific value (As received).....B.t.u./lb.	8,910	8,885	8,740	8,225
Ash softening temperature.....°F.	2380	2370	2420	2400
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		
Ultimate Analysis (As received)—				
Carbon.....%	51·5			
Hydrogen.....%	3·4			
Nitrogen.....%	0·8			
Sulphur.....%	0·2	0·3	0·3	0·4
Oxygen.....%	14·2			
Analyses for Classification—				
Capacity moisture.....%	25·6	25·6	25·6	25·6
B.t.u./lb.....(capacity moisture basis)	8,440	8,420	8,285	7,795
Classification by Rank—				
A.S.T.M.....		Subbituminous C		
S.V.I.....		103—Lignitic		
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	48·3	45·0	43·3	44·3
cu. ft./ton	41·4	44·4	46·2	45·1
Grindability index.....				35·4

ANALYSES OF ASH— (New Black Gem)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	43·9	22·1	4·4	12·5	1·7	0·05	2·5	0·9	1·6	0·5	9·7

REMARKS—

J. B. Starky Co. Ltd., mine No. 1626 also operates in Sec. 36., Tp. 54., R. 25; W. of 4th. As no samples have been received from this mine, for comparative purposes the above analyses might be used. Similarly the above analyses might be used for Samis Collieries, mine No. 1316, which also operates in the same region.

ALBERTA
Edmonton (District B)

THE GREAT WEST COAL CO. LIMITED (1)
BLACK DIAMOND—No. 99
BLACK DIAMOND
55–65,000
Clover Bar—Sec. 7; Tp. 53; R. 23; W. of 4th.

Clover Bar (No. 4)—Edmonton Formation

(2) Lump	Stove, Egg	Nut, Stoker	Slack
+4, +5 rd.	2 x 4, 5 rd.	(3)	0 x 1¼ sq.
8	3	2	3
21·5	21·5	21·5	21·5
7·4	8·0	12·2	9·3
28·7	28·7	26·3	27·6
42·4	41·8	40·0	41·6
9,040	8,965	8,410	8,695
2120	2140	2310	2240
	Non-agglomerate 0		
	0 Negative		
52·9			
3·3			
1·1			
0·3	0·4	0·4	0·3
13·5			
25·0	25·0	25·0	25·0
8,640	8,565	8,030	8,305
	Subbituminous C 101—Lignitic		
	44·9	43·4	49·8
	44·5	46·1	40·2
			38·4

ALBERTA
Edmonton (District B)

KENT COAL COMPANY, LIMITED (4)
KENT—No. 1427
KENT
50–70,000
South Edmonton—Sec. 30; Tp. 52; R. 23 & 24; W. of 4th.

Clover Bar (No. 4)—Edmonton Formation

(5) Lump	Stove, Egg	Slack
+ 5 bar	2½ rd. x 5 bar	0 x 1 sq.
2	1	1
21·5	21·5	21·5
7·2	8·8	13·4
28·7	29·4	26·1
42·6	40·3	39·0
9,100	8,890	8,240
2010	2180	2220
	Non-agglomerate 0	
	0 Negative	
0·3	0·3	0·2
25·0	25·0	25·0
8,695	8,495	7,875
	Subbituminous C 107—Lignitic	
	45·0	51·0
	44·4	39·2

ANALYSES OF ASH— (Black Diamond)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	42·0	25·6	4·2	12·4	1·3	0·05	4·3	2·3	1·5	0·5	3·3

REMARKS—

(1) Not listed in 1953.
(2) Other sizes prepared: Single screened lump— +2 in. rd; Nut—1 in. sq. x 2 in. rd.; Pea—$\frac{5}{8}$ x 1 in. sq.; Pea Slack—0 x $\frac{5}{8}$ in. sq.
(3) Nut: 1¼ x 2 in. rd.; Stoker: ½ x 1½ in. sq.
(4) Controlled by Crown Coal Co., Ltd., Edmonton. Not listed since 1947.
(5) Other sizes prepared: Single screened lump— + 2½ in. rd. Nut—1 in. sq. x 2½ in rd. Pea—$\frac{5}{8}$ x 1 in. sq. Pea Slack—0 x $\frac{5}{8}$ in. sq.

Province	ALBERTA
Area	**Edmonton (District A)**
Operator	MORINVILLE COLLIERY LIMITED (1)
Mine	No. 1635
Trade name	**SPITFIRE**
Output.....approx. tons/annum	18,000
Location of Mine	Morinville—Sec. 32; Tp. 55; R. 25; W. of 4th.
Seam and Formation	Edmonton Formation

Size	Lump	Stove	Nut	Stoker
Screen limits at mine.....in.				
No. of samples	1	1	1	1
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	21·5	21·5	21·5	21·5
Ash.....%	6·8	7·5	7·2	9·8
Volatile matter.....%	31·2	30·5	30·6	29·7
Fixed carbon.....%	40·4	40·4	40·7	39·0
Calorific value (As received).....B.t.u./lb.	9,070	8,955	8,995	8,455
Ash softening temperature.....°F.	2070	2030	2030	2040
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		
Ultimate Analysis (As received)—				
Carbon.....%				
Hydrogen.....%				
Nitrogen.....%				
Sulphur.....%	0·2	0·2	0·2	0·2
Oxygen.....%				
Analyses for Classification—				
Capacity moisture.....%	25·6	25·6	25·6	25·6
B.t.u./lb.....(capacity moisture basis)	8,600	8,490	8,525	8,015
Classification by Rank—				
A.S.T.M		Subbituminous C		
S.V.I.		105—Lignitic		
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	53·0	50·0	48·0	48·0
cu. ft./ton	37·7	40·0	41·7	41·7
Grindability index	35·2	31·0	31·7	33·1

REMARKS—

(1) In 1946 listed as Camarta, John (Operator).

ALBERTA **Edmonton (District B)** OTTEWEL COAL COMPANY (1) OTTEWEL—No. 91 **CLOVER GEM** (DEEP); **MARVEL** (STRIP) 25-45,000 Deep Mine—Sec. 17; Tp. 53; R. 23; W. of 4th. Strip Mine—Sec. 36; Tp. 52; R. 24; W. of 4th. (near Clover Bar) Edmonton Formation			ALBERTA **Edmonton (District B)** MARCUS COAL COMPANY (2) MARCUS—No. 699 **MARCUS** 8-9,000 Clover Bar—Sec. 8; Tp. 53; R. 23; W. of 4th. Edmonton Formation
Lump	Stove	Slack	Lump (3)
+4 rd.	2 x 4 rd.	0 x ¾ sq.	+4 rd.
2	1	1	3
21·5	21·5	21·5	21·5
7·4	6·2	12·3	8·2
29·5	29·8	27·7	29·6
41·6	42·5	38·5	40·7
9,065	9,230	8,340	8,990
2270	2230	2400	2195
	Non-agglomerate 0		Non-agglomerate 0
	0 Negative		0 Negative
0·4	0·4	0·5	0·4
25·0	25·0	25·0	25·0
8,660	8,820	7,970	8,590
	Subbituminous C 105—Lignitic		Subbituminous C 104—Lignitic
	48·5	48·0	
	41·2	41·7	

REMARKS—

(1) Underground mine abandoned in 1944. Company operates a strip pit in Tp. 52; R. 24; W. of 4th. near Clover Bar. No samples received from this mine. Neither mine operating since 1950.

(2) Mine abandoned in 1941.

(3) Egg or stove: 2 x 4 in. or 6 in. rd. also prepared.

Province	ALBERTA
Area	**Edmonton (District A)**
Operator	SUNDANCE MINES LIMITED
Mine	No. 129 (1)
Trade name	**SUNCOLE**
Output.....approx. tons/annum	55-85,000
Location of Mine	Cardiff—Sec. 24; Tp. 55; R. 25; W. of 4th.
Seam and Formation	Edmonton Formation
Size	(2)
Screen limits at mine.....in	
No. of samples	6
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	21·5
Ash.....%	6·8
Volatile matter.....%	30·5
Fixed carbon.....%	41·2
Calorific value (As received).....B.t.u./lb.	9,070
Ash softening temperature.....°F.	2285(3)
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
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·2
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	25·6
B.t.u./lb.....(capacity moisture basis)	8,600
Classification by Rank—	
A.S.T.M.	Subbituminous C
S.V.I.	104—Lignitic

REMARKS—

(1) Strip.

(2) The analyses represent several sizes and are an average for 6 samples reported by the Research Council of Alberta.

(3) Ash softening temperatures from analyses by Fuels Division, Department of Mines and Technical Surveys.

ALBERTA **Gleichen**	ALBERTA **Halcourt (Districts A and B)**
General(1)	General
(2)	(2)
—	—
13-15,000	1000 (3)
Vicinity of Rosebud, Gleichen & Standard Tps. 20, 21, 25, 26; R. 19, 21, 22; W. of 4th.	Near Grande Prairie—Tps. 69, 70; R. 7 to 18; W. of 6th.
Three coal seams—Edmonton Formation	Belly River Formation (4)
Face Samples	Lump and Face Samples
4	6
16·5	14·0
8·4	5·4
31·9	31·5
43·2	49·1
9,610	11,110
2290	2450
Non-agglomerate	Non-agglomerate
0	0
0	0
Negative	Negative
57·3	63·5
3·7	4·1
1·1	1·7
0·4	0·4
12·6	10·9
17·6	14·3 (5)
9,485	11,075
Subbituminous B	High volatile C bituminous
105—Lignitic	127—Subbituminous

Remarks—

(1) Only three operators; no strip pits—1953.

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

(3) Only two small mines in operation in 1952, one a strip pit, and the other a deep mine.

(4) Coal seams thin, vary from 17 to 28 in. in thickness.

(5) Capacity moisture: District A—13·0%; District B—15·5%.

Province	ALBERTA
Area	**Halcourt (District B)**
Operator	Baldwin Collieries
Mine	Globe—No. 651
Trade name	**GLOBE**
Output.....approx. tons/annum	Under 1,000
Location of Mine	Grande Prairie—Tp. 70; R. 7; W. of 6th.
Seam and Formation	Belly River Formation
Size	Lump
Screen limits at mine.....in.	1½ x 8
No. of samples	1
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	14·0
Ash.....%	8·6
Volatile matter.....%	30·9
Fixed carbon.....%	46·5
Calorific value (As received).....B.t.u./lb.	10,600
Ash softening temperature.....°F.	2450
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
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·4
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	15·5
B.t.u./lb.....(capacity moisture basis)	10,415
Classification by Rank—	
A.S.T.M.	High volatile C bituminous
S.V.I.	125—Subbituminous
Physical Properties—	
Bulk density.....lb./cu. ft.	48·5
cu. ft./ton	41·2
Grindability index	

ALBERTA **Highwood**	ALBERTA **Highwood**
GENERAL	FLAT CREEK COALS LIMITED (3)
(1)	FLAT CREEK—No. 1566
—	**FLAT CREEK**
Negligible	(4)
Highwood River, Sheep River, Flat Creek—S.W. of High River—Tps. 15-20; R. 4-8; W. of 5th.	40 mi. S.W. High River—Tp. 17; R. 5; W. of 5th.
Several (2)—Kootenay Formation	Several—Kootenay Formation
Mine Run, Face and Outcrop Samples (Mainly Survey Samples)	Mine Run
20	1
1·5	0·8
17·1	17·8
18·0	15·2
63·4	66·2
12,485	12,395
2850	2850+
Non-agglomerating to weakly caking 0 - 27	Non-agglomerate 0
0 - 3 Negative to 230	0 Negative
74·3	
3·9	
1·2	
0·6	0·6
1·4	
Low volatile bituminous 200-220—Meta to Semi-bituminous	Low volatile bituminous 195—Metabituminous
98	

REMARKS—

(1) The various samples have been taken from the Ford property on the Highwood River and Cat Creek, the Burns property along the Sheep River, and from property along Flat Creek. No extensive mining was ever conducted in this area, but in recent years the Flat Creek Coals Ltd. produced on a small scale. See "Coal Mines in Canada"—Publication No. 4-1, Mineral Resources Division, Mines Branch, Ottawa.

(2) There are about 14 seams in the area (see Report 34—Research Council of Alberta, 1943). Extensive float-and-sink tests conducted by Fuels Division indicated these coals could readily be cleaned down to 9% ash or less. As mined, with only handpicking, the ash content varies from about 10% to 25%.

(3) Not operated since 1942.

(4) Was a small trucking operation.

Province	ALBERTA
Area	**Lethbridge**
Operator	GENERAL (1)
Mine	(2)
Trade name	—
Output.....approx. tons/annum	350-450,000
Location of Mine	Tps. 7 to 10; R. 21 and 22; W. of 4th.
Seam and Formation	Galt—Belly River Formation

Size	Lump, Cobble	Egg, Stove	Nut, Pea, Stoker	Slack
Screen limits at mine.....in.	+4, 4 x 8	1¼, 2 x 4	(3)	0 x ½, ⅝, 1½ or 2
No. of samples	25	27	16	10
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	9·5	9·5	9·5	9·5
Ash.....%	9·8	11·7	12·0	15·0
Volatile matter.....%	35·9	36·2	34·8	33·8
Fixed carbon.....%	44·8	42·6	43·7	41·7
Calorific value (As received).....B.t.u./lb.	10,980	10,730	10,670	10,130
Ash softening temperature.....°F.	2275	2275	2280	2230
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		
Ultimate Analysis (As received)—				
Carbon.....%	63·0			
Hydrogen.....%	4·5			
Nitrogen.....%	1·6			
Sulphur.....%	0·6	0·6	0·6	0·7
Oxygen.....%	11·0			
Analyses for Classification—				
Capacity moisture.....%	10·9	10·9	10·9	10·9
B.t.u./lb.....(capacity moisture basis)	10,810	10,565	10,505	9,970
Classification by Rank—				
A.S.T.M.		High volatile C bituminous		
S.V.I.		126—Subbituminous		
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	52·0	49·2	48·1	50·6
cu. ft./ton	38·5	40·7	41·6	39·5
Grindability index				45·5

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
%.....	43·3	23·2	8·6	12·9	1·8	0	2·0	0·6	0·1	0·6	7·0

REMARKS—

(1) Districts A and B. Limited mining in District C (Tp. 7; R. 21), where some strip mining is conducted. No samples from this district.

(2) See "Coal Mines of Canada"—Publication No. 4-1, Mineral Resources Division, Mines Branch, Ottawa.

(3) Nut—1, 1¼, 1½ x 2, 2½ in. Pea—½, ⅝ x 1, 1¼, 1½ in.

ALBERTA **Lethbridge (District A)** CHESTER, J. C. (1) CHESTER—No. 1095 **ROYAL** 20-25,000 4½ mi. N. of Lethbridge—Sec. 30; Tp. 9; R. 21; W. of 4th. Galt—Belly River Formation				ALBERTA **Lethbridge (District B)** HAMILTON COAL CO., J.J. FEDERAL—No. 1581 **FEDERAL** 25-30,000 Near Lethbridge—Sec. 24; Tp. 9; R. 22; W. of 4th. Galt—Belly River Formation
Lump	Stove	Nut-Pea	Slack	Lump
+4 bar	1¼ x 4 bar	½ x 1¼ bar	0 x ½ bar	+4
1	1	1	1	1
9·5	9·5	9·5	9·5	9·5
9·8	10·2	13·9	17·2	9·1
34·6	35·0	33·9	32·8	34·9
46·1	45·3	42·7	40·5	46·5
11,075	11,000	10,455	9,815	11,120
2210	2220	2250	2180	2140
Non-agglomerate 0				Non-agglomerate 0
0 Negative				0 Negative
0·5	0·6	0·5	0·6	0·5
11·6	11·6	11·6	11·6	10·3
10,820	10,750	10,210	9,585	11,025
High volatile C bituminous 127—Subbituminous				High volatile C bituminous 126—Subbituminous
	49·5	49·0	53·5	
	40·4	40·8	37·4	

REMARKS—
(1) Not listed in 1952.

Province	ALBERTA
Area	**Lethbridge (District A)**
Operator	New Royal View Mine (1)
Mine	No. 1219
Trade name	**NEW ROYAL VIEW**
Output.....approx. tons/annum	10-20,000
Location of Mine	Lethbridge—Sec. 29; Tp. 9; R. 21; W. of 4th.
Seam and Formation	Galt—Belly River Formation.

Size	Lump	Stove	Nut	Slack
Screen limits at mine.....in.	+ 4 bar	2½ x 4 bar	1½ x 2½ bar	0 x ½, 1½ bar.
No. of samples	1	1	1	2
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	9·5	9·5	9·5	9·5
Ash.....%	7·6	9·8	10·6	16·4
Volatile matter.....%	36·5	36·0	34·8	32·7
Fixed carbon.....%	46·4	44·7	45·1	41·4
Calorific value (As received).....B.t.u./lb.	11,470	11,130	10,890	9,960
Ash softening temperature.....°F.	2160	2180	2230	2240
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		
Ultimate Analysis (As received)—				
Carbon.....%				
Hydrogen.....%				
Nitrogen.....%				
Sulphur.....%	0·7	0·7	0·7	0·7
Oxygen.....%				
Analyses for Classification—				
Capacity moisture.....%	11·6	11·6	11·6	11·6
B.t.u./lb.....(capacity moisture basis)	11,210	10,870	10,640	9705
Classification by Rank—				
A.S.T.M		High volatile C bituminous		
S.V.I		130—Subbituminous		
Physical Properties—				
Bulk density.....lb./cu. ft.		48·0	54·5	50·0
cu. ft./ton		41·7	36·7	40·0
Grindability index				

Remarks—

(1) Not listed since 1946. Until 1942 listed as Lethbridge Co-operative Mines Assn. Ltd., Parkoal mine. In 1943 and 1944 listed as Strickland and Tennant mine.

ALBERTA
Lethbridge (District A)

LETHBRIDGE COLLIERIES LTD.
CADILLAC; STANDARD—No. 1263
CADILLAC
135-155,000
Shaughnessy—Sec. 30; Tp. 10; R. 21; W. of 4th.
Galt—Belly River Formation.

Lump, Cobble	Egg, Stove	Stoker, Pea	Slack (1)
+ 4 rd; 4 x 8 rd.	2 x 4 rd.	$\frac{5}{8}$ x 2 rd.	0 x 2 rd.
7	12	6	3
9·5	9·5	9·5	9·5
10·5	12·0	12·6	14·4
35·5	34·9	35·2	34·6
44·5	43·6	42·6	41·5
10,850	10,630	10,475	10,180
2320	2320	2315	2260
Non-agglomerate 0			
0 Negative			
62·1			
4·5			
1·5			
0·6	0·6	0·6	0·8
11·3			
11·6	11·6	11·6	11·6
10,600	10,385	10,230	9,940
High volatile C bituminous 123—Subbituminous			
52·0	49·3	47·0	48·0
38·5	40·6	42·6	41·7
			47·0

ALBERTA
Lethbridge (District B)

LETHBRIDGE COLLIERIES LTD.*
GALT No. 8—No. 1464
GALT
150-170,000
Lethbridge—Sec. 2; Tp. 9; R. 22; W. of 4th.
Galt—Belly River Formation.

Lump, Cobble	Egg, Stove	Stoker, Nut	Slack (2)
+ 4, 4 x 8 rd.	2 x 4 rd.	$\frac{5}{8}$ slot x $1\frac{1}{8}$, 2 rd.	0 x $\frac{5}{8}$ slot
14	12	6	3
9·5	9·5	9·5	9·5
9·5	11·7	11·0	13·5
36·2	35·7	34·8	34·3
44·8	43·1	44·7	42·7
11,095	10,785	10,920	10,430
2275	2260	2300	2225
Non-agglomerate 0			
0 Negative			
63·4			
4·5			
1·6			
0·6	0·7	0·6	0·8
10·9			
10·3	10·3	10·3	10·3
11,000	10,690	10,820	10,340
High volatile C bituminous 128—Subbituminous			
52·0	49·3	47·4	52·5
38·5	40·6	42·2	38·1
			44·0

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	0	1·8	0·9	0·1	0·7	5·4

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—
(1) Also 0 x $\frac{3}{4}$ in. rd.
(2) Also 0 x $1\frac{1}{8}$ in. rd.
* Certain sizes dry cleaned.

Province	ALBERTA
Area	**Lethbridge (District A)**
Operator	Lund, Nelson and Hagblad (1)
Mine	Royal View—No. 1109
Trade name	**ROYAL VIEW**
Output.....approx. tons/annum	10-20,000
Location of Mine	Near Lethbridge—Sec. 31; Tp. 9; R. 21; W. of 4th.
Seam and Formation	Galt—Belly River Formation

Size	Lump	Stove	Nut	Pea	Slack
Screen limits at mine.....in.	+4 bar	1½ x 4 bar	⅞ sq. x 1¼ bar	½ x ⅞ sq.	0 x ½ sq.
No. of samples	1	1	1	1	1
Chemical Properties—					
Proximate Analysis (As received)—					
Moisture.....%	9·5	9·5	9·5	9·5	9·5
Ash.....%	12·9	11·6	11·0	14·8	16·9
Volatile matter.....%	34·4	34·5	34·3	33·5	32·6
Fixed carbon.....%	43·2	44·4	45·2	42·2	41·0
Calorific value (As received).....B.t.u./lb.	10,620	10,655	10,790	10,250	9,775
Ash softening temperature.....°F.	2250	2200	2170	2200	2180
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		
Ultimate Analysis (As received)—					
Carbon.....%					
Hydrogen.....%					
Nitrogen.....%					
Sulphur.....%	0·5	0·6	0·6	0·6	0·6
Oxygen.....%					
Analyses for Classification—					
Capacity moisture.....%	11·6	11·6	11·6	11·6	11·6
B.t.u./lb.....(capacity moisture basis)	10,375	10,410	10,540	10,015	9,550
Classification by Rank—					
A.S.T.M.			High volatile C bituminous		
S.V.I.			127—Subbituminous		
Physical Properties—					
Bulk density.....lb./cu. ft.		48·5	47·5	50·5	51·0
cu. ft./ton		41·2	42·1	39·6	39·2

Remarks—

(1) Closed down in 1942.

ALBERTA **Magrath**	ALBERTA **Milk River**
GENERAL (1) —	GENERAL (3) —
Negligible	700-1,800
Vicinity of Cardston—Tps. 1 and 2; R. 26; W. of 4th. Vicinity of Fishburn—Tp. 2; R. 28; W. of 4th.	Tps. 2 and 3; R. 11-16; W. of 4th.
Several thin seams—Belly River Formation (2)	Several thin seams—Belly River Formation

Mine Samples	Face Samples	
3	District A Tp. 2-3; R. 15-16 Milk River	District B Tp. 2-3; R. 11-12 Lucky Strike
7·0	13·3	20·0
9·7	13·5	7·8
35·6	30·9	30·2
47·7	42·3	42·0
11,865	10,000	9,450
		1950
Agglomerate	Non-agglomerate 0	
	0 Negative	
66·8	56·6	
4·6	3·8	
1·7	1·4	
0·9	0·7	0·7
9·3	10·7	
7·0	14·0	20·0
11,865	9,915	9,450
High volatile B bituminous 139—Subbituminous	Subbituminous A 125—Subbituminous	Subbituminous B 111—Lignitic

REMARKS—

(1) No operating mines in 1952. One operator in 1941: Miller, W., Fishburn mine.

(2) Coal seams younger than the Belly River also occur in this area.

(3) District A. (No operations in this district since 1945.) Wood, Matt—Oberon mine—Milk River.

District B. Koshman, A. & Martell, J.—Lucky Strike mine—No. 1301 (New Benwell).

Province	ALBERTA
Area	**Morley**
Operator	GENERAL (1)
Mine	—
Trade name	—
Output.....approx. tons/annum	150-1,000
Location of Mine	Tps. 25, 29; R. 4-7; W. of 5th. in Vicinity of Morley.
Seam and Formation	Belly River Formation.

	A	B (2)
Size	Mine Run	Mine Run
Screen limits at mine.....in.		
No. of samples	2	1
CHEMICAL PROPERTIES—		
Proximate Analysis (As received)—		
Moisture.....%	4·1	7·3
Ash.....%	9·8	12·2
Volatile matter.....%	36·5	33·3
Fixed carbon.....%	49·6	47·2
Calorific value (As received).....B.t.u./lb.	12,960	11,290
Ash softening temperature.....°F.	2140	
Caking Properties—		
Volatile matter residue—950°C	Fair	Poor
Caking index (Gray)		
Swelling Properties—		
Swelling index (A.S.T.M.)		
Swelling index (F.R.L.)		
Ultimate Analysis (As received)—		
Carbon.....%		
Hydrogen.....%		
Nitrogen.....%		
Sulphur.....%	0·5	0·5
Oxygen.....%		
Analyses for Classification—		
Capacity moisture.....%	3·2	7·3
B.t.u./lb.....(capacity moisture basis)	13,000	11,290
Classification by Rank—		
A.S.T.M	High volatile A bituminous	High volatile B bituminous
S.V.I	162—Parabituminous	Subbituminous
PHYSICAL PROPERTIES—		
Bulk density.....lb./cu. ft. cu. ft./ton		
Grindability index		

REMARKS—

(1) No operations since 1949, when the only mine in the district at that time closed down.

(2) Analyses from Research Council of Alberta, Report No. 35.

ALBERTA
Mountain Park (Cadomin, Luscar and Mountain Park Basins)

GENERAL
(1)
—
700,000-800,000
Tps. 45 to 47; R. 23 to 24; W. of 5th.
(2)—Luscar Formation

ALBERTA
Mountain Park (Cadomin Basin) (District B)

CADOMIN COAL CO. LTD. (3)
CADOMIN—No. 693 (4)
CADOMIN; ROCKY MOUNTAIN SPLINT
300-450,000
Cadomin—Sec. 31; Tp. 46; R. 23; W. of 5th.
Main—Luscar Formation

Cadomin Basin	Luscar Basin	Mt. Park Basin			
Mine Run	Mine Run	Mine Run	Mine Run (5)	Stoker	Slack
				$\frac{3}{4}$ x $1\frac{5}{8}$ sq.	0 x $\frac{3}{4}$, $1\frac{5}{8}$ sq.
23	77	22	23	2	12
2·5	2·5	2·5	2·5	2·0	3·0
13·1	13·1	12·7	13·1	10·7	11·3
25·4	20·8	27·1	25·4	25·9	25·5
59·0	63·6	57·7	59·0	61·4	60·2
12,915	13,025	13,010	12,915	13,390	13,255
2540	2400-2700+	2445	2540	2575	2770
Good	Fair to Good	Good		Good	
40	20-45	50		40	
2	1·5	5·5		2	
52	Negative to 450	635		52	
73·6	75·0	73·7	73·6		
4·5	4·3	4·5	4·5		
1·1	1·1	1·2	1·1		
0·3	0·3	0·3	0·3	0·3	0·3
4·9	3·7	5·1	4·9		
Medium volatile bituminous		High volatile A bituminous	Medium volatile bituminous		
174	184	171	174—Orthobituminous		
59·5	60·3	54·6	59·5	52·0	53·9 (6)
33·6	33·2	36·6	33·6	38·4	37·1
82·0	88·2	84·0	82·0		83·5

ANALYSES OF ASH—(Cadomin; Rocky Mountain Splint)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	54·8	23·9	6·4	6·9	2·0	0	1·0	0·7	0·5	1·3	2·3

REMARKS—
(1) **Cadomin Basin**—Cadomin Coal Co., Ltd.—Cadomin mine (Closed down in 1952.). **Luscar Basin**—Gregg River Collieries—Gregg River mine (not listed in 1953)—Luscar Coals Limited—Luscar mine. **Mountain Park Basin**—Mountain Park Coals Ltd.—Mountain Park mine (No operations in this basin since 1950). (2) **Cadomin and Luscar Basins**—Main seam. **Mt. Park Basin**—No. 1 (Kennedy), No. 2 and No. 3 seams. (3) Strip operation as well as underground mining. The preparation plant was equipped with dry and wet cleaning machines. (4) Mine closed in 1952. (5) Some of these samples were oil-treated. Include strip coal which was somewhat higher in ash and moisture. (6) The oil treated slack had a lower bulk density —approx. 52·0 lb/ cu. ft.

Province	ALBERTA
Area	**Mountain Park (Luscar Basin) (District A)**
Operator	Gregg River Collieries (1)
Mine	Gregg River—No.1302 (2)
Trade name	**GREGG RIVER**
Output ..... approx. tons/annum	30-75,000
Location of Mine	Gregg River—Sec. 28; Tp. 47; R. 24; W. of 5th.
Seam and Formation	Main—Luscar Formation

Size	Mine Run (3)	Slack
Screen limits at mine ..... in.		
No. of samples	65	2
Chemical Properties—		
Proximate Analysis (As received)—		
Moisture ..... %	2·5	3·5
Ash ..... %	12·9	13·4
Volatile matter ..... %	20·7	20·4
Fixed carbon ..... %	63·9	62·7
Calorific value (As received) ..... B.t.u./lb.	13,110	12,835
Ash softening temperature ..... °F.	2700+(4)	2850+
Caking Properties—		
Volatile matter residue—950°C	Good	
Caking index (Gray)	45	
Swelling Properties—		
Swelling index (A.S.T.M.)	1	
Swelling index (F.R.L.)	0-450 (5)	
Ultimate Analysis (As received)—		
Carbon ..... %	75·5	
Hydrogen ..... %	4·3	
Nitrogen ..... %	1·2	
Sulphur ..... %	0·3	0·3
Oxygen ..... %	3·3	
Analyses for Classification—		
Capacity moisture ..... %		
B.t.u./lb. ..... (capacity moisture basis)		
Classification by Rank—		
A.S.T.M.	Medium volatile bituminous	
S.V.I.	183—Orthobituminous	
Physical Properties—		
Bulk density ..... lb./cu. ft.	59·2	57·8
cu. ft./ton	33·8	34·6
Grindability index	86·8	84·9
Resistance to Shattering (4 drops)—		
Stability (+1½ in.) ..... %		
Fines (−¼ in.) ..... %		
Tumbler Test (Friability)—		
Stability (+1 in.) ..... %		
Abradability (−10 mesh) ..... %		
Apparent Specific Gravity		

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
%	61·7	30·8	2·0	1·4	0·5	0	1·5	0·6	0·5	1·0	0·3

Remarks—(1) Prior to 1947 this was K. D. Collieries Ltd., Kaydee mine (not operating in 1953). (2) Strip pits—previously operated underground mines. (3) This includes the average analyses of 12 samples for 1938 and 49 samples for 1939, obtained from C.N.R. (4) Ash softening temperature varied from 2400°F. to 2850+°F. (5) The cleaner the coal the higher is the swelling index.

ALBERTA
Mountain Park (Luscar Basin) (District A)

LUSCAR COALS LTD. (1)
LUSCAR—No. 905
LUSCAR
400-550,000
Luscar—Sec. 23; Tp. 47; R. 24; W. of 5th.
Main—Luscar Formation

ALBERTA
Mountain Park (Mountain Park Basin) (District C)

MOUNTAIN PARK COALS LTD.
MOUNTAIN PARK—No. 282 (6)
MOUNTAIN PARK
200-300,000 (7)
Mountain Park—Sec. 33; Tp. 45; R. 23; W. of 5th.
No. 1 (Kennedy), No. 2 and No. 3—Luscar Formation

Mine Run (2)	Lump	Slack (3)	Briquettes	Mine Run	Lump (8)	Stoker (9)	Slack
	¾ x 4 rd.	0 x 1½ rd.	2 x 2 x 1¼ (2·5 oz.)		+1⅝, +⅞ rd.	¼ x 1⅝ rd.	0 x 1⅝ rd.
12	3	4	4	22	16	3	5
2·5	1·5	3·5	1·0	2·5	1·5	2·0	3·0
14·0	15·1	15·3	16·7	12·7	12·2	14·0	15·9
21·1	22·7	20·2	25·8	27·1	27·7	26·4	26·6
62·4	60·7	61·0	56·5	57·7	58·6	57·6	54·5
12,875	12,680	12,500	12,800	13,010	13,185	12,725	12,440
2550–2750+	2320–2750+	2500–2750+	2750+	2445	2375	2430	2500
	Fair 20-35		Poor		Good 50		
	1·5 −259 (Negative) (4)				5·5 635		
74·1				73·7			
4·2				4·5			
1·1				1·2			
0·4	0·3	0·2	0·4	0·3	0·3	0·3	0·3
3·7				5·1			
	Medium volatile bituminous 185—Orthobituminous				High volatile A bituminous 171—Ortho to Parabituminous		
61·5			43·6	54·6		50·8	54·0
32·5			45·9	36·6		39·4	37·0
87·6		93·2		84·0	75·0		90·1
			(5) R C				
			63·5 78·0				
			18·5 10·5				
			85·1 90·2				
			14·4 9·7				
			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	0·9	0·8	0·3	0·9	3·6

ANALYSES OF ASH— (Mountain Park)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	57·9	25·5	3·5	6·7	1·3	0	0·4	0·8	0·3	0·8	3·1

REMARKS—(1) A large proportion of the coal is mined by means of a strip operation. Preparation plant includes wet and dry cleaning equipment. Also operate a briquetting plant for production of domestic and railway briquettes. In conjunction with this plant a Parry dryer is used, and the 0 x ¼ in. fines used in the production of briquettes are pneumatically cleaned. (2) This includes an average of 12 samples for 1938 and 12 samples for 1939 obtained from C.N.R. in addition to our own samples. (3) Also 0 x ¾ in. (4) Low ash washed coal may exhibit a positive swelling index up to approx. 250. (5) See pages 8-9 for significance of tests on briquettes. (6) Closed down in 1950. (7) Production in 1950 down to approx. 56,000 tons. (8) Lump was usually prepared by crushing all oversize to pass 5½ in. screen. (9) Stoker—also ¼ in. x ⅞ in. rd.

R—Railway briquettes (low asphalt—about 4%.). C—Commercial briquettes (about 50% more asphalt than railway briquettes).

Province	ALBERTA
Area	**Nordegg**
Operator	Brazeau Collieries Ltd. (1)
Mine	Nordegg—Nos. 256, 1585 (*)
Trade name	**BRAZEAU; BITUMINOUS STEAM**
Output.....approx. tons/annum	300-360,000
Location of Mine	Nordegg—Sec. 22, Tp. 40; R. 15, W. of 5.th.
Seam and Formation	No. 2 and No. 3—Luscar Formation

	(2) Briquettes	Nut Slack	Mine Run	Stoker (6)
Size				
Screen limits at mine.....in.	2¼ x 2¼ x 1⅝ (3·0 oz.)	(3)	(4)	½ x 1
No. of samples	38	2	30	2
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	1·3	2·0	2·0	1·5
Ash.....%	13·1	13·2	13·8	12·8
Volatile matter.....%	19·2	15·4	15·6	16·0
Fixed carbon.....%	66·4	69·4	68·6	69·7
Calorific value (As received).....B.t.u /lb.	13,340	13,295	13,085	13,320
Ash softening temperature.....°F.	2850+	2775+	2850+	2850+
Caking Properties—				
Volatile matter residue—950°C	Poor	Poor	Fair to Good	
Caking index (Gray)			28·5	
Swelling Properties—				
Swelling index (A.S.T.M.)	1	1	0-5	
Swelling index (F.R.L.)			Negative to 950 (5)	
Ultimate Analysis (As received)—				
Carbon.....%	77·5		76·2	
Hydrogen.....%	4·3		3·9	
Nitrogen.....%	1·1		1·2	
Sulphur.....%	0·7	0·5	0·6	0·5
Oxygen.....%	2·0		2·3	
Analyses for Classification—				
Capacity moisture.....%				
B.t.u./lb. .....(capacity moisture basis)				
Classification by Rank—				
A.S.T.M.		Low volatile bituminous		
S.V.I.		210—Semi-bituminous		
Physical Properties—				
Bulk density.....lb./cu. ft.	44·5	56·0	59·0	45·0
cu. ft./ton	44·9	35·7	33·9	44·5
Grindability index		108·7	101·2	
	C R			
Resistance to Shattering (4 drops)—(7)				
Stability (+ 1½ in.).....%	80·4 80·0			
Fines(−¼ in.).....%	5·7 20·0			
Tumbler Test (Friability)—				
Stability (+1 in.).....%	93·7 92·8			
Abradability (−10 mesh).....%	6·1 7·2			
Apparent Specific Gravity	1·24 1·21			

Analyses of Ash— (Brazeau; Bituminous Steam)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	57·1	30·8	3·0	3·1	1·2	0·0	0·4	0·8	1·0	1·0	1·7

Remarks—

(1) Tipple destroyed by fire in 1950. Rebuilt and placed in operation late in 1951, with complete wet washing equipment. (2) Locomotive and commercial types using petroleum asphalt binder; locomotive briquettes made with about 4% asphalt and commercial briquettes with about 6% asphalt. (3) Also briquetting slack. (4) When prepared in past the railway mine run contained approximately 10% briquettes. (5) The free swelling properties of the coal blend varies with the degree of cleaning and the quantity and quality of the strip coal in the blend. (6) When prepared in past was usually dust-proofed by oiling, subsequent to dry cleaning. (7) See pages 8-9 for significance of tests on briquettes. C—Commercial briquettes; R—Railway briquettes.

(*) Both strip and underground mines. Mine Number 1585 not listed in 1952.

N.B.—Total production of coal is briquetted at present, making either railway or domestic type briquettes.

ALBERTA **Pakan**	ALBERTA **Pakowki**
General (1)	General (2)
—	—
—	—
Nil	500
Tps. 9-20; R. 54-60; W. of 4th.	Dist. A: Near Granlea—Tp. 8 and 2; R. 8 and 6; W. of 4th. Dist. B: Near Tothill—Tp. 8 and 9; R. 4 and 5; W. of 4th. Dist. C: Near Elkwater—Tp. 7 and 8; R. 2 and 3; W. of 4th.
Belly River Formation	Several Seams—Belly River Formation (3)

	District A	District B	District C
Mine Run and Face Samples		Mine Run	
5			
13·0*	24·0	30·0	32·0
8·7	10·1	7·0	9·0
34·3	27·5	29·1	28·3
44·0	38·4	33·9	30·7
9,560	8,390	7,500	6,990
	2010	2150	2250
Non-agglomerate 0		Non-agglomerate 0	
0 Negative		0 Negative	
	49·4	44·0	41·4
	3·3	3·0	3·0
	1·0	0·8	0·6
1·1	0·7	0·4	0·2
	11·5	14·8	13·8
	24·5	29·6	32·6
	8,330	7,540	6,930
Subbituminous B 95—Brown Lignite	Subbituminous B 102—Black Lignite	Subbituminous C 89—Brown Lignite	Lignite 90—Brown Lignite

Remarks—

(1) No operating mines. (2) District A: no operations since 1942. District B: no operations since 1945. District C: in 1952 there was only one operation, mine No. 1318, Elkwater mine. (3) At Elkwater the lignite seams are in the Edmonton Formation. * This moisture is very low for a subbituminous B coal—analyses on air dried samples.

Province	ALBERTA
Area	**Pekisko (Districts A and B)**
Operator	GENERAL
Mine	(1)
Trade name	—
Output.....approx. tons/annum	3-7,000
Location of Mine	Tps. 18-22; R. 2-4; W. of 5th.
Seam and Formation	Several—Belly River Formation
Size	Mine Samples (2)
Screen limits at mine.....in.	
No. of samples	5
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	7·0
Ash.....%	9·4
Volatile matter.....%	35·4
Fixed carbon.....%	48·2
Calorific value (As received).....B.t.u./lb.	12,210
Ash softening temperature.....°F.	2300
Caking Properties—	
Volatile matter residue—950°C.	Poor
Caking index (Gray)	
Swelling Properties—	
Swelling index (A.S.T.M.)	
Swelling index (F.R.L.)	Negative
Ultimate Analysis (As received)—	
Carbon.....%	68·1
Hydrogen.....%	4·7
Nitrogen.....%	1·7
Sulphur.....%	0·7
Oxygen.....%	8·4
Analyses for Classification—	
Capacity moisture.....%	7·0
B.t.u./lb.....(capacity moisture basis)	12,210
Classification by Rank—	
A.S.T.M.	High volatile B bituminous
S.V.I.	147—Subbituminous (agglomerating)
PHYSICAL PROPERTIES—	
Bulk density.....lb./cu. ft. cu. ft./ton	
Grindability index	

REMARKS—
(1) Operator in 1952: Ideal Coal Ltd.—mine No. 1516—Priddis, Alta.
(2) Includes a recent commercial sample from Fish Creek mine which has not been listed since 1944.

ALBERTA
Pembina (Districts A, B and C)

GENERAL
(1)
—
110-200,000
Evansburg (District A)—Tps. 53 and 54; R. 6-8; W. of 5th.
Wabamun (Districts B and C)—Tps. 50-53; R. 3 and 4; W. of 5th.
Upper or Big (No. 14) and Lower (2) Edmonton Formation

ALBERTA
Pembina (Wabamun District) (District B)

THE ALBERTA SOUTHERN COAL CO., LTD. (3)
VICTORY—No. 419 (4)
VICTORY
70-95,000
Wabamun—Sec. 9; Tp. 53; R. 4; W. of 5th.

Upper or Big (5)—Edmonton Formation

Evansburg District	Wabamun District				
Mine Run	Mine Run	Mine Run (6)	Lump, Egg, Stove (7)	Nut, Stoker $\frac{7}{16}$ x 2	Slack 0 x 1½
9	12	2	8	4	1
16·0	18·5	18·5	18·5	18·5	18·5
8·8	8·1	8·1	8·2	9·7	10·2
29·7	28·8	28·8	28·9	28·9	27·1
45·5	44·6	44·6	44·4	42·9	44·2
9,340	9,230	9,230	9,145	8,980	9,020
2080	2395	2395	2410	2415	2400
Non-agglomerate 0		Non-agglomerate 0			
0 Negative		0 Negative			
58·3	55·1	55·1			
3·3	3·3	3·3			
0·8	0·7	0·7			
0·2	0·2	0·2	0·2	0·2	0·2
12·6	14·1	14·1			
19·0	21·0	21·4	21·4	21·4	21·4
9,005	8,945	8,900	8,820	8,660	8,700
Subbituminous B 92 Brown Lignite 96		Subbituminous B 96—Brown Lignite			
			48·3	44·5	49·8
			41·4	44·9	40·2
		42·8			

REMARKS—
(1) Operators listed in 1952:
Evansburg District (District A)—
Pembina Peerless Coal Co. Ltd.—mine No. 1495.
Fry & Larsen (closed in 1951).
Oppenheim; L. T. and M. M.—mine No. 1657 (closed).
Wabamun District (Districts B & C)—
The Alberta Southern Coal Co. Ltd.—mine No. 419 (strip).
Lothian Collieries Ltd.—mine No. 1645 (strip).
Pinter Coals Ltd.—mine No. 1670 (strip).
Mt. Royal Collieries Ltd.—mine No. 1592 (strip).
Several small operations.
(2) The upper or Big seam is mined in Wabamun district, whereas the Lower seam is mined in Evansburg district. (3) Prior to 1949 the Lakeside Coals Ltd. (4) Closed in 1951, but again listed as operating in 1953 as strip mine. (5) Also a lower seam. (6) Also called "single screened lump". (7) Lump: +6 in. Egg: 2 x 4 in. and Stove: 1½ x 4 in.

Province	ALBERTA
Area	**Pembina (Evansburg) (District A)**
Operator	Pembina Peerless Coal Co. Ltd. (1)
Mine	Pembina—No. 1495 (Strip Pit)
Trade name	**PEMBINA PEERLESS**
Output.....approx. tons/annum	3-4,000
Location of Mine	Entwistle—Sec. 34; Tp. 53; R. 7; W. of 5th.
Seam and Formation	Lower—Edmonton Formation
Size	Mine Run (2)
Screen limits at mine.....in.	
No. of samples	5
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	16·0
Ash.....%	9·7
Volatile matter.....%	28·8
Fixed carbon.....%	45·5
Calorific value (As received).....B.t.u./lb.	9,310
Ash softening temperature.....°F.	2080
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
Ultimate Analysis (As received)—	
Carbon.....%	57·8
Hydrogen.....%	3·3
Nitrogen.....%	0·8
Sulphur.....%	0·2
Oxygen.....%	12·2
Analyses for Classification—	
Capacity moisture.....%	19·0
B.t.u./lb.....(capacity moisture basis)	8,975
Classification by Rank—	
A.S.T.M.	Subbituminous B
S.V.I.	94—Brown Lignite

Remarks—

(1) Listed previously as Entwistle Collieries Ltd. and more recently as Pembina Collieries Ltd.

(2) Also Lump or Egg.

ALBERTA **Pincher (District A)**	ALBERTA **Prairie Creek**
GENERAL	GENERAL
(1)	(4)
—	—
Under 1,000	Under 1,000 (5)
District A: Vicinity of Lundbreck—Tps. 7-10; R. 2 and 3; W. of 5th. District B: Tp. 5; R. 19; W. of 4th.	Tp. 51; R. 24 and 25; W. of 5th.—Hinton
No. 1 and No. 2—Belly River Formation	Several—Saunders Formation

	Typical Analyses (6)	
	District A	District B
Mine Samples	Tp. 51; R. 25	Tp. 51; R. 24
5		
6·0	7·0	8·4
14·6	10·7	10·4
33·7	35·3	34·2
45·7	47·0	47·0
11,535	11,850	11,200
2710	—	—
Fair to Poor	Poor	Non-agglomerate
Negative		
65·3		
4·5		
1·7		
0·8	0·3	0·2
7·1		
6·0		
11,535		
High volatile B bituminous (3)	High volatile B bituminous.	High volatile C bituminous
149—Subbituminous (agglomerating)	146—Subbituminous—132	

ANALYSES OF ASH (7)— (Prairie Creek)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	56·9	20·5	6·5	9·1	1·5	0·04	0·3	0·9	0·5	0·7	3·1

REMARKS—

(1) Rhodes Mining Co., mine No. 1440, listed in 1952 as closed down, but operating in 1953.
(2) Calculated from data presented in Research Council of Alberta Report No. 35.
(3) Also some high volatile A and C bituminous coal available in this area in District B.
(4) See "Coal Mines in Canada", Publication No. 4-1, Mineral Resources Division, Mines Branch, Ottawa.
(5) In 1940 the output was 100,000 tons.
(6) Typical analyses according to Stansfield & Lang; Research Council of Alberta Report No. 35.
(7) Department of Mines and Technical Surveys analysis.

79600—10½

Province	ALBERTA
Area	**Redcliff**
Operator	GENERAL
Mine	(1)
Trade name	—
Output.....approx. tons/annum	5-10,000
Location of Mine	Redcliff—Tp. 13; R. 6; W. of 4th.
Seam and Formation	1 Seam (Approx. 4' thick)—Belly River Formation
Size	Mine Run, Lump
Screen limits at mine.....in.	
No. of samples	6
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	25·0
Ash.....%	6·0
Volatile matter.....%	28·8
Fixed carbon.....%	40·2
Calorific value (As received).....B.t.u./lb.	8,700
Ash softening temperature.....°F.	2090
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
Ultimate Analysis (As received)—	
Carbon.....%	53·0
Hydrogen.....%	3·4
Nitrogen.....%	0·9
Sulphur.....%	0·5
Oxygen.....%	11·2
Analyses for Classification—	
Capacity moisture.....%	25·5
B.t.u./lb.....(capacity moisture basis)	8,640
Classification by Rank—	
A.S.T.M	Subbituminous C
S.V.I.	101—Lignitic

REMARKS—

(1) Ajax Coal Co., Ajax mine—only operating mine in 1952.

ALBERTA **Redcliff**	ALBERTA **Redcliff**
Ajax Coal Co. (1) Ajax—Mine No. 772 **AJAX** 5-10,000 Redcliff—Sec. 5; Tp. 13; R. 6; W. of 4th. Belly River Formation	Gunderson Brick & Coal Co. Ltd. (2) Redcliff Peerless—No. 165 **REDCLIFF PEERLESS** 5-12,000 Redcliff—Tp. 13; R. 6; W. of 4th. Belly River Formation
Mine Run, Lump	Mine Run
2	4
25·0 6·6 28·4 40·0 8,755 2050	25·0 6·0 28·4 40·6 8,650 2130
Non-agglomerate 0	Non-agglomerate 0
0 Negative	0 Negative
53·0 3·5 0·7 0·4 10·8	51·5 3·2 1·0 0·5 12·8
25·5 8,695	25·5 8,590
Subbituminous C 104—Lignitic	Subbituminous C 97—Lignitic

Remarks—

(1) Prior to 1947 listed as Ajax Coal Co., Alta.
Up to 1951 listed as Cooke, C. R. & Naylor, C. A.
In 1951 listed as Naco Coal Co. and in 1952 again as Ajax Coal Co.

(2) Not listed since 1945.

Province	ALBERTA
Area	**Saunders**
Operator	GENERAL
Mine	(1)
Trade name	—
Output.....approx. tons/annum	50-60,000
Location of Mine	Tp. 40; R. 13; W. of 5th.
Seam and Formation	Several—Saunders Formation

	Lump	Stove	Nut	Slack
Size				
Screen limits at mine.....in.	(2)	(3)	(4)	
No. of samples	15	6	5	14
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	9·0	9·0	9·0	9·0
Ash.....%	7·2	7·3	8·3	9·0
Volatile matter.....%	33·2	33·4	32·3	32·1
Fixed carbon.....%	50·6	50·3	50·4	49·9
Calorific value (As received).....B.t.u./lb.	11,400	11,460	11,420	11,250
Ash softening temperature.....°F.	2260	2195	2220	2220
Caking Properties—				
Volatile matter residue—950°C		Agglomerate		
Caking index (Gray)		0		
Swelling Properties—				
Swelling index (A.S.T.M.)		0		
Swelling index (F.R.L.)		Negative		
Ultimate Analysis (As received)—				
Carbon.....%	66·6			
Hydrogen.....%	4·2			
Nitrogen.....%	1·0			
Sulphur.....%	0·4	0·4	0·4	0·4
Oxygen.....%	11·6			
Analyses for Classification—				
Capacity moisture.....%	9·5	9·5	9·5	9·5
B.t.u./lb.....(capacity moisture basis)	11,340	11,395	11,360	11,190
Classification by Rank—				
A.S.T.M		High volatile C bituminous		
S.V.I		124—Subbituminous		
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	47·4	48·5	48·3	51·8
cu. ft./ton	42·2	41·3	41·4	38·6
Grindability index				44·2

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	15·3	8·3	29·1	2·2	0·5	1·9	0·5	1·0	1·0	6·7

REMARKS—

(1) Bighorn & Saunders Creek Collieries Ltd.—Bighorn mine; Alexo Coal Company Limited—Alexo (Saunders) mine.

(2) Double screened and small or "Junior" lump.

(3) Equivalent to about $1\frac{1}{2}$ x $2\frac{3}{4}$ in. rd.

(4) Equivalent to about $\frac{3}{4}$ x $1\frac{1}{2}$ in. rd.

ALBERTA
Saunders

ALEXO COAL COMPANY LIMITED

ALEXO—No. 852
ALEXO; ACORN SAUNDERS
20-30,000
Alexo—Sec. 27; Tp. 40; R. 13 W. of 5th.
Several—Saunders Formation

Mine Run	Lump (1)	Stove	Nut	Slack
	+(10 x 18) Slot	1¼ sq. to 2½ x 10 Slot	⅝ x 1¼ sq.	0 x 1¼ sq.
6	5	3	3	4
9·0	9·0	9·0	9·0	9·0
6·9	7·1	6·8	7·2	8·0
33·2	33·2	33·4	32·9	32·4
50·9	50·7	50·8	50·9	50·5
11,520	11,465	11,510	11,600	11,375
2105	2200	2180	2165	2185
	Agglomerate			
	0			
	0 Negative			
66·4				
4·1				
1·0				
0·4	0·3	0·3	0·3	0·4
12·2				
9·5	9·5	9·5	9·5	9·5
11,455	11,400	11,445	11,535	11,310
	High volatile C bituminous 125—Subbituminous			
	47·5	48·5	48·3	52·7
	42·1	41·2	41·4	38·0
42·8				44·2

ALBERTA
Saunders

BIGHORN AND SAUNDERS CREEK COLLIERIES, LTD.*

BIGHORN—No. 388
BIGHORN; SAUNDERS CREEK
20-30,000
Saunders—Sec. 24; Tp. 40; R. 13; W. of 5th.
Several—Saunders Formation

Lump (2)	Stove	Nut	Slack (3)
+12 bar	1½ x 2¾ rd.	¾ x 1½ rd.	0 x ¾ or 1½ rd.
12	3	2	10
9·0	9·0	9·0	9·0
7·7	8·0	9·0	9·3
32·9	33·0	32·3	32·0
50·4	50·0	49·7	49·7
11,370	11,415	11,265	11,215
2095	2220	2320	2235
Agglomerate			
0			
0 Negative			
66·2			
4·2			
1·0			
0·4	0·4	0·5	0·4
11·5			
9·5	9·5	9·5	9·5
11,310	11,350	11,205	11,155
High volatile C bituminous 123—Subbituminous			
47·3	48·4	48·3	51·3
42·3	41·3	41·4	39·0
			44·2

ANALYSES OF ASH— (Alexo; Acorn Saunders)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	30·5	15·5	9·8	28·9	2·3	0·8	2·3	0·1	1·5	0·8	7·5

ANALYSES OF ASH— (Bighorn; Saunders Creek)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	36·9	15·1	6·8	29·2	2·1	0·1	1·6	0·9	0·5	1·3	5·9

REMARKS—

(1) Double screened lump: also includes small lump—2½ x 10 in. slot to 10 x 18 in. slot. (2) Double screened lump: also includes "Junior" lump (Cobble)—4 x 8 in. slot by 12 in. bar. The analysis also includes "Ostrich Egg"—2¾ in. rd. x (4 x 8 in.) slot. (3) Slack:—the 0 x 1½ in. coal is often called nut slack or stoker coal.

* Closed in late 1953.

Province	ALBERTA
Area	**Sheerness**
Operator	GENERAL
Mine	(1)
Trade name	—
Output.....approx. tons/annum	55-70,000
Location of Mine	Tps. 29 to 34; R. 12 to 17; W. of 4th.
Seam and Formation	No. 1—Edmonton Formation(2)

Size	Lump, Cobble	Stoker Pea	Slack
Screen limits at mine.....in.	+6, 2 x 6	½ x 1¼	0 x ½, 1¼
No. of samples	6	1	2
CHEMICAL PROPERTIES—			
Proximate Analysis (As received)—			
Moisture.....%	26·0	26·0	26·0
Ash.....%	6·0	7·0	7·2
Volatile matter.....%	29·1	29·3	29·5
Fixed carbon.....%	38·9	37·7	37·3
Calorific value (As received).....B.t.u./lb.	8,475	8,340	8,355
Ash softening temperature.....°F.	2150	2110	2260
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	
Ultimate Analysis (As received)—			
Carbon.....%	52·0		
Hydrogen.....%	3·4		
Nitrogen.....%	1·2		
Sulphur.....%	0·5	0·3	0·6
Oxygen.....%	10·9		
Analyses for Classification—			
Capacity moisture.....%	27·5	27·5	27·5
B.t.u./lb.....(capacity moisture basis)	8,300	8,170	8,185
Classification by Rank—			
A.S.T.M.		Subbituminous C	
S.V.I.		97—Lignitic	
PHYSICAL PROPERTIES—			
Bulk density.....lb./cu. ft.	47·0	43·0	52·0
cu. ft./ton	42·5	46·5	38·4

REMARKS—

(1) Western Dominion Coal Mines Ltd.—No. 443 and No. 1432 mines (District E); J. Masciangelo—Blossom mine (District C); Crystal Coal Company—Crystal mine (District E); Also five other small stripping mines.

(2) Seams corresponding to Nos. 1 to 6 in the Drumheller District observed in this area, but mining is mainly in No. 1 seam.

ALBERTA **Sheerness (District C)**	ALBERTA **Sheerness (District E)**		
J. Masciangelo Blossom—No. 1553	Western Dominion Coal Mines Ltd. (1) No. 443 (Chinook), No. 1432 (Sheebo)— (Strip Pits)		
BLOSSOM	**ROSELYN** (2)		
Under 1,000	30-60,000		
Delia—Sec. 21; Tp. 30; R. 17; W. of 4th.	Secs. 17-19; Tp. 29; R. 13 and 12; W. of 4th.		
Edmonton Formation	No. 1 Seam—Edmonton Formation		
Lump	Lump	Cobble	Core Samples
	+6	2 x 6	(3)
1	4	3	5
23·6	26·0	26·0	26·0
9·2	5·9	6·8	7·9
27·4	29·7	29·2	28·3
39·8	38·4	38·0	37·8
8,410	8,520	8,360	8,110
2100	2140	2225	2160 (4)
Non-agglomerate 0	Non-agglomerate 0		
0 Negative	0 Negative		
	52·1		
	3·4		
	1·2		
0·3	0·4	0·5	0·4
	11·0		
23·6	27·5	27·5	27·5
8,410	8,350	8,190	7,945
Subbituminous C 97—Lignitic	Subbituminous C 100—Lignitic		
	48·3	46·0	
	41·4	43·5	

Remarks—

(1) Previous to 1952 two separate mines—mine No. 443: Chinook Coal Co. Ltd. and mine No. 1432: Sheerness Coal Co. Ltd.

(2) Previous trade names: "Sheerness-Chinook" (mine No. 443); "Sheebo" (mine No. 1432).

(3) Core samples analysed by Milton Hersey Ltd. in April 1952 and calculated to F.R.L. moisture value, included merely to indicate that quality of coal in new locations similar to that mined in past.

(4) F.P.A. of 27 samples analysed by Milton Hersey varied from 2050-2455°F.

Province	ALBERTA
Area	**Smoky River**
Operator	No Operating Mines
Mine	—
Trade name	—
Output.....approx. tons/annum	
Location of Mine	In vicinity of Smoky River, a tributary of the Peace River—Tps. 52-60; R. 1-13; W. of 6th.
Seam and Formation	Kootenay Formation
Size	Mine Run, Prospects
Screen limits at mine.....in.	
No. of samples	30
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	2·7
Ash.....%	8·8
Volatile matter.....%	18·6
Fixed carbon.....%	69·9
Calorific value (As received).....B.t.u./lb.	13,360
Ash softening temperature.....°F.	
Caking Properties—	
Volatile matter residue—950°C.	Non-Caking to Poor Caking
Caking index (Gray)	
Swelling Properties—	
Swelling index (A.S.T.M.)	
Swelling index (F.R.L.)	Mainly non-swelling
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·4
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	
B.t.u./lb.....(capacity moisture basis)	
Classification by Rank—	
A.S.T.M.	Low volatile bituminous (1)
S.V.I.	181—Orthobituminous
Physical Properties—	
Bulk density.....lb./cu. ft. cu. ft./ton	
Grindability index	

Remarks—

(1) Some of the coals are medium volatile bituminous.

ALBERTA
Taber

GENERAL
(1)

120-140,000
District A: Taber—Tps. 9-11; R. 16-17; W. of 4th.
District B: Grassy Lake—Tp. 9; R. 13; W. of 4th.
District C: Winnifred—Tps. 11-12; R. 10-11; W. of 4th.
Several Seams—No. 2 Principally Mined. Belly River Formation

ALBERTA
Taber (District A)

ALBERTA SOUTHERN COAL CO. LTD. (5)
No. 1064 (STRIP PIT)
SOUTHALTA
75-125,000
Taber—Sec. 12; Tp. 10; R. 17; W. of 4th.

No. 2—Belly River Formation

District A	District B	District C	Lump (6)(7) +4 rd.	Egg (8) 1¾ sq. x 4 rd.
14 (2)	8 (2)	1 (3)	3 (9)	14
14·0	17·0	21·0	14·0	14·0
10·4	10·4	7·6	11·4	10·1
31·6	30·0	28·4	32·7	31·4
44·0	42·6	43·0	41·9	44·5
10,000	9,450	9,070	10,010	10,015
2310	2195		2380	2210
	Non-agglomerate		Non-agglomerate	
	0		0	
	0		0	
	Negative		Negative	
57·3	54·7	54·3		57·6
4·0	3·8	3·5		4·0
1·4	1·2	1·0		1·4
1·1	1·4	0·6	1·0	1·1
11·8	11·5	12·0		11·8
15·9	18·5	22·5	15·8	15·8
9,775	9,275	8,900	9,800	9,805
Subbituminous A	Subbituminous B to A	Subbituminous B	Subbituminous A	
118—Lignitic	113—Lignitic	102—Lignitic	125—Lignitic	
	54·0(4)		56·5	47·4
	37·0		35·4	42·2
	49·0			

REMARKS—
(1) Operators in 1952—
District A—The Alberta Southern Coal Co. Ltd.—Mine No. 1604 (Southalta), Taber (Strip) Oliver Coal Mine, Lewis—Mine No. 1536, Taber, Alta. (Closed in 1951)
District B—Continental Coal Corp.—Mine No. 1334 and No. 1580, Grassy Lake, Alta. (Strip mine)
District C—Cooke, C. R.—Mine No. 672, Winnifred. (Closed in 1951)
McCraken, D. & Goring, H.—Mine No. 838, Alderson, Alta. (Closed in 1951)
(2) Mine and commercial samples. (3) Mine sample. (4) Mine Run sample.
(5) Formerly Majestic Mines Ltd., and until 1948 listed as Southern Alberta Coal Co., which also operated mine No. 1609 in Tp. 10; R. 16; until 1949, formerly operated by Western Ventures Ltd. ("Firewel"). In 1949 listed as Southalta Coal Co. Ltd., and in 1952 changed to Alberta Southern Coal Co. Ltd.
N.B. Analyses represent both mines.
(6) Also produce: ⅞ x 1¾ in. sq. Nut; ½ x ⅞ in. sq. Stoker; 0 x ½ in. sq. Slack. (7) 50% of output.
(8) About 21% of output. (9) Includes channel sample from Research Council of Alberta.

Province	ALBERTA
Area	**Taber (District B)**
Operator	CONTINENTAL COAL CORP. (1)
Mine	No. 1334 (STRIP PIT)
Trade name	**MISSION** (3)
Output.....approx. tons/annum	10-35,000
Location of Mine	Grassy Lake—Secs. 23 and 26; Tp. 9; R. 13; W. of 4th.
Seam and Formation	Belly River Formation

Size	Lump, Egg	Nut	Stoker	Slack
Screen limits at mine.....in.	(2)	$\frac{7}{8}$ sq. x 2 rd.	$\frac{3}{8}$ x $\frac{7}{8}$ sq.	0 x $\frac{3}{8}$ sq.
No of samples	3	2	2	2
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture.....%	17·0	17·0	17·0	17·0
Ash.....%	10·9	10·8	10·8	12·1
Volatile matter.....%	30·2	29·6	29·8	28·6
Fixed carbon.....%	41·9	42·4	42·4	42·3
Calorific value (As received).....B.t.u./lb.	9,380	9,265	9,405	9,135
Ash softening temperature.....°F.	2215	2165	2190	2225
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			
Ultimate Analysis (As received)—				
Carbon.....%	54·3			
Hydrogen.....%	3·8			
Nitrogen.....%	1·2			
Sulphur.....%	1·6	1·7	1·6	1·7
Oxygen.....%	11·2			
Analyses for Classification—				
Capacity moisture.....%	18·5	18·5	18·5	18·5
B.t.u./lb.....(capacity moisture basis)	9,210	9,095	9,235	8,970
Classification by Rank—				
A.S.T.M.	Subbituminous A to B			
S.V.I.	113—Lignitic			
PHYSICAL PROPERTIES—				
Bulk density.....lb./cu. ft.	50·1	47·5	46·0	46·5
cu. ft./ton	39·9	42·1	43·5	43·0
Grindability index				49·0

ANALYSES OF ASH— (Alburna)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	47·8	30·5	4·3	7·0	1·8	0·01	1·3	0·9	0·5	0·8	4·3

REMARKS—

(1) Formerly Southern Alberta Coal Co.

(2) Lump—Plus 4 in. rd., Egg—2 x 4 in. rd.

(3) Previously called "Alburna".

ALBERTA **Taber (District A)**	ALBERTA **Tofield**	
Oliver Coal Mine, Lewis Oliver—No. 1536 (1) **OLIVER**	General (2) —	
5-10,000 Taber—Sec. 18; Tp. 10; R. 16; W. of 4th.	140-170,000 Tps. 49 and 50; R. 17-19; W. of 4th.	
Belly River Formation	Top Seams—Edmonton Formation	
Lump	Mine Run, Lump	Stoker Nut
1	18	53
14·0	25·0	25·0
6·8	7·1	8·0
32·9	28·8	27·8
46·3	39·1	39·2
10,755	8,625	8,590
2130	2100	2160
Non-agglomerate 0	Non-agglomerate 0	
0 Negative	0 Negative	
	49·0	
	3·1	
	1·0	
0·9	0·5	0·5
	14·3	
15·9	28·1	28·1
10,515	8,270	8,235
Subbituminous A 125—Lignitic	Subbituminous C 103—Lignitic	
	45-51 44·4-39·2	

Analyses of Ash (3)— (Tofield)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%.....	28·7	29·8	5·1	18·9	(4)	(4)	(4)	(4)	(4)	(4)	10·6

Remarks—

(1) Not listed in 1952.

(2) Black Nugget Coal Co. Ltd.—Black Nugget mine.
Dodds Coal Mine (Skarin & Clarke)—North Star mine.
Tofield Coal Co., Ltd.—Tofield Mine.

(3) From Research Council of Alberta Report No. 35.

(4) Not determined.

Province	ALBERTA
Area	**Tofield (District B)**
Operator	The Black Nugget Coal Co., Ltd.
Mine	Black Nugget—No. 1107 (1)
Trade name	**BLACK NUGGET; HI-LO**
Output.....approx. tons/annum	115-140,000
Location of Mine	Dodds—Sec. 11; Tp. 49; R. 18; W. of 4th.
Seam and Formation	Top Seam—Edmonton Formation.

Size	Mine Run	Lump, Egg	Stoker	Pea
Screen limits at mine.....in.		2 x 8, 2 x 4	½ x 1½ sq.	½ x ½ sq.
No. of samples	1	6	1	1
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	25·0	25·0	25·0	25·0
Ash.....%	9·0	7·7	9·5	9·8
Volatile matter.....%	27·8	28·3	28·2	27·5
Fixed carbon.....%	38·2	39·0	37·3	37·7
Calorific value (As received).....B.t.u./lb.	8,325	8,470	8,230	8,140
Ash softening temperature.....°F.	2160	2240	2130	2190
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		
Ultimate Analysis (As received)—				
Carbon.....%	47·5			
Hydrogen.....%	3·0			
Nitrogen.....%	1·0			
Sulphur.....%	0·7	0·5	0·5	0·5
Oxygen.....%	13·8			
Analyses for Classification—				
Capacity moisture.....%	28·0	28·0	28·0	28·0
B.t.u./lb.....(capacity moisture basis)	7,995	8,130	7,900	7,810
Classification by Rank—				
A.S.T.M		Subbituminous C		
S.V.I		100—Lignitic		
Physical Properties—				
Bulk density.....lb./cu. ft.	52·8	44·7	42·0	42·0
cu. ft./ton	37·9	44·7	47·6	44·7

Remarks—

(1) Stripping pit; previously a shaft mine.

ALBERTA
Tofield (District B)

DODDS COAL MINE
DODDS—No. 215 (STRIP PIT)
NORTH STAR; CRIMSON BLAZE
10-20,000
Dodds—Sec. 14; Tp. 49; R. 18; W. of 4th.
Top Seam—Edmonton Formation.

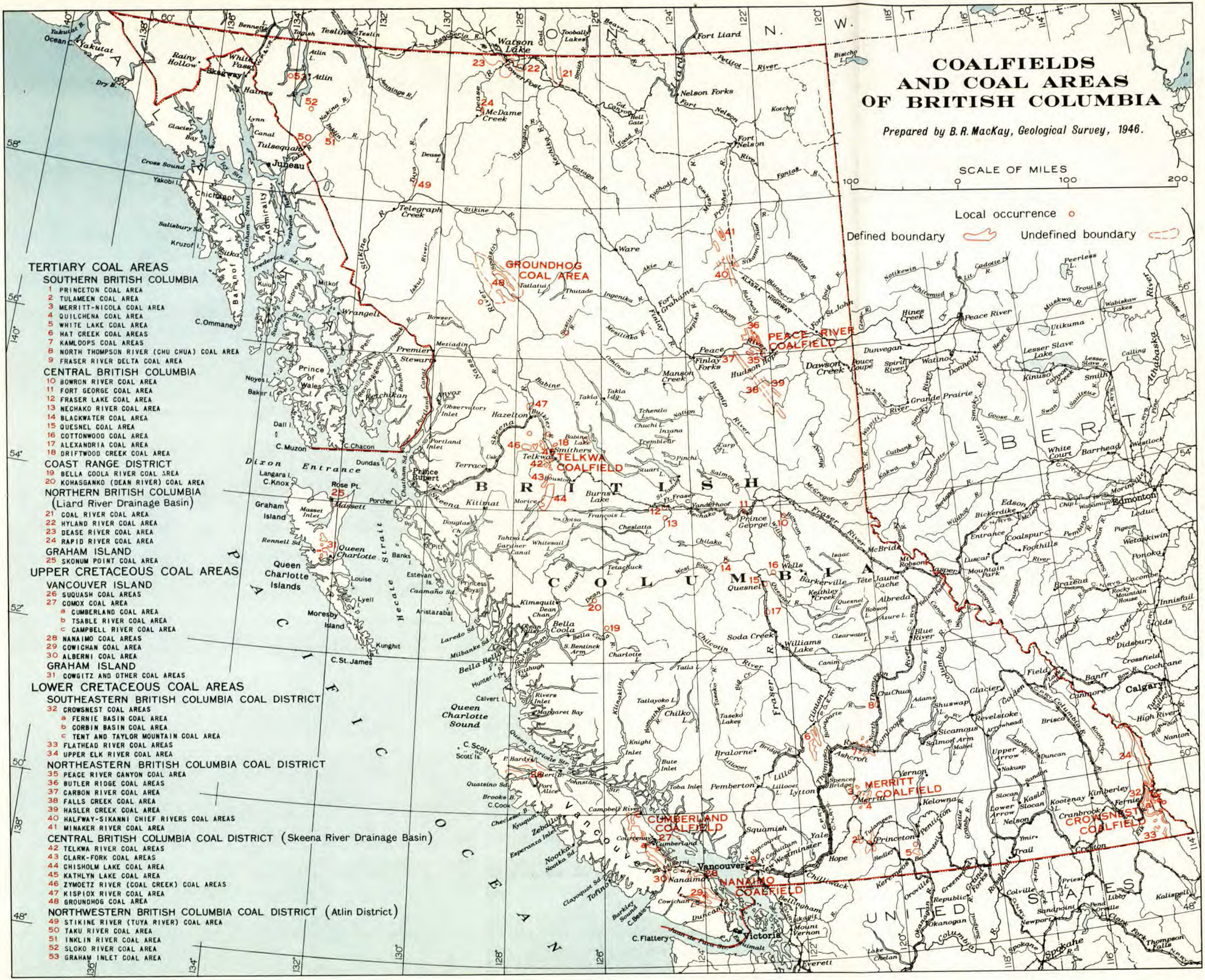
Mine Run	Lump
+ 1½ fork	+ 12 (1)
1	2
25·0	25·0
7·2	7·4
28·0	28·3
39·8	39·3
8,625	8,585
2030	2085
Non-agglomerate	
0	
0	
Negative	
0·5	0·6
28·0	28·0
8,285	8,240
Subbituminous C	
104—Lignitic	
	48·5
	41·2

ALBERTA
Tofield (District A)

TOFIELD COAL CO., LTD.
TOFIELD—No. 252 (STRIP PIT)
HEADLIGHT
45-80,000
Tofield—Tp. 50; R. 19; W. of 4th.
Top Seam—Edmonton Formation

Mine Run, Lump (2)	Stoker Nut	Slack
+ 2 fork	⅜ x 1½	0 x 1½
9	53	1
25·0	25·0	25·0
6·9	8·1	6·4
29·0	27·8	27·6
39·1	39·1	41·0
8,700	8,495	8,825
2275	2165	2140
Non-agglomerate		
0		
0		
Negative		
49·6		
3·2		
0·9		
0·4	0·5	0·4
14·0		
28·1	28·1	28·1
8,345	8,140	8,460
Subbituminous C		
105—Lignitic		
50·3		
39·8		

REMARKS—
(1) Handpicked.
(2) Also "stove"—2 x 4 in.


COALFIELDS AND COAL AREAS OF BRITISH COLUMBIA
Prepared by B. R. MacKay, Geological Survey, 1946.
SCALE OF MILES
100 0 100 200
Local occurrence
Defined boundary
Undefined boundary
TERTIARY COAL AREAS
SOUTHERN BRITISH COLUMBIA
1 PRINCETON COAL AREA
2 TULAMEEN COAL AREA
3 MERRITT-NICOLA COAL AREA
4 QUILCHENA COAL AREA
5 WHITE LAKE COAL AREA
6 HAT CREEK COAL AREAS
7 KAMLOOPS COAL AREAS
8 NORTH THOMPSON RIVER (CHU CHUA) COAL AREA
9 FRASER RIVER DELTA COAL AREA
CENTRAL BRITISH COLUMBIA
10 BOWRON RIVER COAL AREA
11 FORT GEORGE COAL AREA
12 FRASER LAKE COAL AREA
13 NECHAKO RIVER COAL AREA
14 BLACKWATER COAL AREA
15 QUESNEL COAL AREA
16 COTTONWOOD COAL AREA
17 ALEXANDRIA COAL AREA
18 DRIFTWOOD CREEK COAL AREA
COAST RANGE DISTRICT
19 BELLA COOLA RIVER COAL AREA
20 KOHASGANKO (DEAN RIVER) COAL AREA
NORTHERN BRITISH COLUMBIA (Liard River Drainage Basin)
21 COAL RIVER COAL AREA
22 HYLAND RIVER COAL AREA
23 DEASE RIVER COAL AREA
24 RAPID RIVER COAL AREA
GRAHAM ISLAND
25 SKONUM POINT COAL AREA
UPPER CRETACEOUS COAL AREAS
VANCOUVER ISLAND
26 SUQUASH COAL AREAS
27 COMOX COAL AREA
a CUMBERLAND COAL AREA
b TSABLE RIVER COAL AREA
c CAMPBELL RIVER COAL AREA
28 NANAIMO COAL AREAS
29 COWICHAN COAL AREA
30 ALBERNI COAL AREA
GRAHAM ISLAND
31 COWGITZ AND OTHER COAL AREAS
LOWER CRETACEOUS COAL AREAS
SOUTHEASTERN BRITISH COLUMBIA COAL DISTRICT
32 CROWSNEST COAL AREAS
a FERNIE BASIN COAL AREA
b CORBIN BASIN COAL AREA
c TENT AND TAYLOR MOUNTAIN COAL AREA
33 FLATHEAD RIVER COAL AREAS
34 UPPER ELK RIVER COAL AREA
NORTHEASTERN BRITISH COLUMBIA COAL DISTRICT
35 PEACE RIVER CANYON COAL AREA
36 BUTLER RIDGE COAL AREAS
37 CARBON RIVER COAL AREA
38 FALLS CREEK COAL AREA
39 HASLER CREEK COAL AREA
40 HALFWAY-SIKANNI CHIEF RIVERS COAL AREAS
41 MINAKER RIVER COAL AREA
CENTRAL BRITISH COLUMBIA COAL DISTRICT (Skeena River Drainage Basin)
42 TELKWA RIVER COAL AREAS
43 CLARK-FORK COAL AREAS
44 CHISHOLM LAKE COAL AREA
45 KATHLYN LAKE COAL AREA
46 ZYMOETZ RIVER (COAL CREEK) COAL AREAS
47 KISPIOX RIVER COAL AREA
48 GROUNDHOG COAL AREA
NORTHWESTERN BRITISH COLUMBIA COAL DISTRICT (Atlin District)
49 STIKINE RIVER (TUYA RIVER) COAL AREA
50 TAKU RIVER COAL AREA
51 INKLIN RIVER COAL AREA
52 SLOKO RIVER COAL AREA
53 GRAHAM INLET COAL AREA
GROUNDHOG COAL AREA
TELKWA COALFIELD
PEACE RIVER COALFIELD
MERRITT COALFIELD
CUMBERLAND COALFIELD
NANAIMO COALFIELD
CROWSNEST COALFIELD
BRITISH COLUMBIA
ALBERTA
YUKON
N.W.T.
PACIFIC OCEAN
UNITED STATES

Province	BRITISH COLUMBIA (SOUTH)
Area	**Ashcroft (Hat Creek)**
Operator	Hat Creek Coal Mine (1)
Mine	Hat Creek
Trade name	**HAT CREEK**
Output.....approx. tons/annum	2-3,000
Location of Mine	Upper Hat Creek, 15 Mi. E. of Pavilion Approx. 50° Latitude, 120° Longitude, N.W. portion.
Seam and Formation	Tertiary Coal
Size	Mine Run (2)
Screen limits at mine.....in.	
No. of samples	27
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	29·0
Ash.....%	16·5
Volatile matter.....%	26·6
Fixed carbon.....%	27·9
Calorific value (As received).....B.t.u./lb.	6,635
Ash softening temperature.....°F.	2780
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
Ultimate Analysis (As received)—	
Carbon.....%	38·9
Hydrogen.....%	2·8
Nitrogen.....%	0·9
Sulphur.....%	0·6
Oxygen.....%	11·3
Analyses for Classification—	
Capacity moisture.....%	
B.t.u./lb.....(capacity moisture basis)	
Classification by Rank—	
A.S.T.M.	Subbituminous C
S.V.I.	103—Lignitic

Remarks—

(1) Strip pit in recent years—not operating since 1947.

(2) Most of the samples were either face samples from the earlier underground workings, or similar samples from the more recent strip operation.

Province	BRITISH COLUMBIA (SOUTH)
Area	**Merritt (Nicola Valley)**
Operator	MERRITT COAL MINES LTD. (1)
Mine	DIAMOND VALE No. 4
Trade name	**DIAMOND VALE**
Output.....approx. tons/annum	5-10,000
Location of Mine	Two miles East of Merritt
Seam and Formation	Tertiary.
Size	Slack
Screen limits at mine.....in.	
No. of samples	3
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	8·0
Ash.....%	15·8
Volatile matter.....%	30·9
Fixed carbon.....%	45·3
Calorific value (As received).....B.t.u./lb.	10,970
Ash softening temperature.....°F.	2670
Caking Properties—	
Volatile matter residue—950°C	Agglomerate
Caking index (Gray)	
Swelling Properties—	
Swelling index (A.S.T.M.)	0
Swelling index (F.R.L.)	Negative
Ultimate Analysis (As received)—	
Carbon.....%	
Hydrogen.....%	
Nitrogen.....%	
Sulphur.....%	0·6
Oxygen.....%	
Analyses for Classification—	
Capacity moisture.....%	
B.t.u./lb.....(capacity moisture basis)	
Classification by Rank—	
A.S.T.M.	High volatile B bituminous
S.V.I.	149—Subbituminous
PHYSICAL PROPERTIES—	
Bulk density.....lb./cu. ft.	
cu. ft./ton	
Grindability index	

REMARKS—

(1) Closed since 1946.

BRITISH COLUMBIA (SOUTH) **Merritt (Nicola Valley)**	BRITISH COLUMBIA (SOUTH) **Princeton**
MIDDLESBORO COLLIERIES LTD. (1) No. 3 NORTH AND No. 2 SOUTH **MIDDLESBORO** — Merritt No. 3 Seam and No. 2 Seam—Tertiary	GENERAL (3) — 5-15,000 (4) In vicinity of Princeton. Tertiary.

Rly. Mine Run (2)	Lump	Nut Pea	Slack	Mine Run and Lump
½ rd. x 8 bar	+ 2½, 8 bar		0 x ½ rd.	
4	10	2	2	26
8·0	8·0	8·3	9·0	18·0
19·3	14·8	15·0	16·6	8·4
32·4	33·9	33·6	30·5	31·0
40·3	43·3	41·3	43·9	42·6
10,250	11,020	10,920	10,585	9,725
2850+	2850+	2850+	2850+	2155
	Agglomerate			Non-agglomerate 0
	0 Negative			0 Negative
	61·8			55·7
	4·5			3·6
	1·5			1·6
0·5	0·5	0·5	0·5	0·6
	8·9			12·1
8·3	8·3	8·3	8·3	20·0
10,170	10,935	10,920	10,620	9,490
	High volatile B bituminous 140—Subbituminous			Subbituminous B 119—Lignitic
56·3			48·5	
35·5			41·3	
57·0			58·7	39-45

ANALYSES OF ASH— (Middlesboro)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	54·1	31·8	5·9	2·4	1·2	0·05	1·2	1·2	0·5	0·9	1·1

REMARKS—

(1) Closed since 1944.

(2) Analysis calculated on basis of equal quantities of No. 2 and No. 3 seams in the commercial product. As mined No. 2 seam contained about 14·8% ash (dry basis), whereas No. 3 seam contained 23·0% ash.

(3) Most of the mines represented in the above analysis have been abandoned. In 1952 there were the following two operations: Taylor-Burson Coal Co. Ltd.—Jackson mine—4 mi. W. of Princeton. Wukelich, J. P.—Old Princeton Colliery—Princeton (Closed in 1953).

(4) Output in 1952 under 5,000 tons.

Province	BRITISH COLUMBIA (SOUTH)
Area	**Princeton**
Operator	THE GRANBY CONSOLIDATED MINING, SMELTING & POWER CO., LTD.
Mine	No. 1 AND No. 2 (1)
Trade name	**GRANBY TULAMEEN**
Output.....approx. tons/annum	—
Location of Mine	Bromley Creek, 6 mi. W. of Princeton.
Seam and Formation	Tertiary

Size	Lump, Stove-Nut	Slack
Screen limits at mine.....in.	+ 5, + 6 rd., 1¼ x 3 sq.	0 x ⅝ rd.
No. of samples	7	2
CHEMICAL PROPERTIES—		
Proximate Analysis (As received)—		
Moisture.....%	18·0	18·0
Ash.....%	12·1	19·7
Volatile matter.....%	29·9	26·7
Fixed carbon.....%	40·0	35·6
Calorific value (As received).....B.t.u./lb.	8,990	7,875
Ash softening temperature.....°F.	2230	2270
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	
Ultimate Analysis (As received)—		
Carbon.....%		
Hydrogen.....%		
Nitrogen.....%		
Sulphur.....%	0·5	0·5
Oxygen.....%		
Analyses for Classification—		
Capacity moisture.....%	19·0	19·0
B.t.u./lb.....(capacity moisture basis)	8,880	7,780
Classification by Rank—		
A.S.T.M.	Subbituminous B	
S.V.I.	117—Lignitic	
PHYSICAL PROPERTIES—		
Bulk density.....lb./cu. ft.	47·0	48·5
cu. ft./ton	42·5	41·2
Grindability index	39–45	

REMARKS—

(1) Closed since 1943.

BRITISH COLUMBIA (SOUTH) **Princeton**	BRITISH COLUMBIA (SOUTH EAST) **East Kootenay**
PRINCETON TULAMEEN COAL CO., LTD. (1)	THE CONSOLIDATED MINING & SMELTING CO. LTD.
No. 1 **TULAMEEN VALLEY; PRINCETON** — One Mile West of Princeton. Tertiary	CORBIN COLLIERY No. 3 (2) **CORBIN** Up to 160,000 Coal Mountain Lower Cretaceous

Lump, Egg	Nut, Pea	Slack	Stoker
+ 4½ rd., 2½ x 4½ rd.	1 sq. x 2½ rd., ⅝ x 1 sq.	0 x ⅝ sq.	
6	3	1	19
18·0	18·0	18·0	3·0
6·6	7·9	11·0	16·4
31·4	31·0	28·9	22·2
44·0	43·1	42·1	58·4
10,045	9,780	9,290	12,140
2090	2050	2060	2640
	Non-agglomerate		Good
	0		
	0 Negative		
			70·6
			3·9
			1·1
0·4	0·3	0·3	0·3
			4·7
20·0	20·0	20·0	
9,800	9,540	9,065	
	Subbituminous B 120—Lignitic		Medium volatile bituminous 176—Orthobituminous
48·0	48·0	49·5	
41·7	41·7	40·4	
	39–45		

REMARKS—

(1) Closed down in 1944.

(2) Strip mine in recent years, but closed since 1944.

Province	BRITISH COLUMBIA (SOUTH EAST)
Area	**East Kootenay**
Operator	The Crow's Nest Pass Coal Co. Ltd.
Mine	Coal Creek (No. 1 East); Elk River (No. 3, 4, 9) (1)
Trade name	**COAL CREEK**
Output.....approx. tons/annum	(See Michel)
Location of Mine	Coal Creek, 4 miles E. of Fernie
Seam and Formation	No. 1 East; No. 4; No. 9.—Kootenay Formation; Lower Cretaceous

	Mine Run	Slack
Size		
Screen limits at mine.....in.		0 x ½ rd.
No. of samples	4	21
Chemical Properties—		
Proximate Analysis (As received)—		
Moisture.....%	1·2	1·5
Ash.....%	8·2	9·9
Volatile matter.....%	24·4	25·1
Fixed carbon.....%	66·2	63·5
Calorific value (As received).....B.t.u./lb.	14,195	13,925
Ash softening temperature.....°F.	2290	2365
Caking Properties—		
Volatile matter residue—950°C.	Good	
Caking index (Gray)	45–68	
Swelling Properties—		
Swelling index (A.S.T.M.)	3–8 (2)	
Swelling index (F.R.L.)	215–1400	
Ultimate Analysis (As received)—		
Carbon.....%	81·1	
Hydrogen.....%	4·8	
Nitrogen.....%	1·2	
Sulphur.....%	0·3	0·3
Oxygen.....%	3·0	
Classification by Rank—		
A.S.T.M.	Medium volatile bituminous	
S.V.I.	195—Metabituminous	
Physical Properties—		
Bulk density.....lb./cu. ft.		52·5
cu. ft./ton		38·1
Grindability index	95–110	110–118

Analyses of Ash— (Coal Creek)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	58·3	23·6	4·1	5·3	1·6	0·03	0·3	1·3	1·7	0·9	3·0

Remarks—

(1) Elk River Collieries, operating on No. 3, No. 4 and No. 9 seams are situated about ¾ mile from the old Coal Creek mine (No. 1 East), and were opened during and subsequent to 1943. The coal from both the Coal Creek and Elk River Collieries are handled in the same preparation plant and are not segregated. The preparation plant is equipped with wet washing jigs, dryers and air cleaning tables.

(2) Coal Creek (No. 1 East)—8·5; Elk River No. 4—2·5-7; Elk River No. 9—6-8.

BRITISH COLUMBIA (SOUTH EAST)
East Kootenay

THE CROW'S NEST PASS COAL CO., LTD. (1)
MICHEL COLLIERY (2)

MICHEL

950-1,230,000 (Michel + Coal Creek)*
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
	+7 lip	$1\frac{5}{8}$ sq. x 7 lip	(3)	0 x $1\frac{5}{8}$ sq.	0 x $\frac{3}{16}$ sq.
28	8	3	16	64	3
1·5	1·0	1·0	1·5	2·5	3·0
7·4	9·6	9·0	6·7	8·5	9·9
24·8	24·1	23·2	24·8	24·1	23·1
66·3	65·3	66·8	67·0	64·9	64·0
14,105	13,800	13,845	14,160	13,830	13,380
2480 (4)	2605 (4)	2570 (4)	2560 (4)	2670 (4)	2790 (4)
		Good 45-60			
		7·5-9 750-1400			
80·0 4·8 1·4 0·6 4·3	0·6	0·5	0·6	0·7	0·6
		Medium volatile bituminous 185—Orthobituminous			
57·0 35·1	51·5 38·8	53·5 37·4	50·0 40·0	54·3 36·8	50·3 39·8
		95–125			

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
%.....	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) Stoker— $\frac{3}{16}$ x $1\frac{5}{8}$ in. sq.
(4) Ash softening temperature varies between 2080°F and 2750°F. The B seam is usually lower.
* Michel output in 1952 was about 890,000 tons with approximately 32% coming from the strip mine.

Province	BRITISH COLUMBIA (CENTRAL)
Area	**Groundhog**
Operator	—
Mine	None—Prospects Only
Trade name	—
Output.....approx. tons/annum	Nil
Location of Mine	About 110 mi. N. of Hazelton
Seam and Formation	Several—Kootenay Formation; Lower Cretaceous

	Face Samples (1)	
	Range	Average
Size		
Screen limits at mine.....in.		
No. of samples	12	12
Chemical Properties—		
Proximate Analysis (As received)—		
Moisture.....%	8·9–17·2	10·3
Ash.....%	12·8–33·7	23·5
Volatile matter.....%	4·5–11·6	6·8
Fixed carbon.....%	50·0–67·8	59·4
Calorific value (As received).....B.t.u./lb.	6,950–11,155	9,575
Ash softening temperature.....°F.	2260–2700	
Caking Properties—		
Volatile matter residue—950°C	Non-agglomerate	
Caking index (Gray)		
Swelling Properties—		
Swelling index (A.S.T.M.)	0	
Swelling index (F.R.L.)	Negative	
Ultimate Analysis (As received)—		
Carbon.....%		
Hydrogen.....%		
Nitrogen.....%		
Sulphur.....%	0·4–1·5	0·6
Oxygen.....%		
Classification by Rank—		
A.S.T.M.	Anthracite	
S.V.I.	202—Anthracite (2)	
Physical Properties—		
Bulk density.....lb./cu. ft.		
cu. ft./ton		
Grindability index		

Remarks—

(1) Prospect samples taken 4 to 6 ft. from surface, thus accounting for high moisture content. Samples taken by Geological Survey of Canada.

(2) S.V.I. low because coal oxidized; therefore calorific value low. Mineral matter-free calorific value is 14,910. If not oxidized would be approximately 15,330.

BRITISH COLUMBIA (CENTRAL)
Kathlyn Lake (Bulkley Valley)

GENERAL
MAINLY PROSPECTS
—
—
Near Kathlyn Lake, in vicinity of Smithers, B.C. some 12–15 mi. N.W. of Telkwa
Lower Cretaceous

BRITISH COLUMBIA (CENTRAL)
Telkwa

BULKLEY VALLEY COLLIERIES LTD.
BULKLEY VALLEY No. 2 MINE
BULKLEY VALLEY
20-30,000
On Goat Creek, 7½ mi. S. of Telkwa

Betty Seam—Lower Cretaceous

Mine Run	Mine Run	Lump	Nut Slack
9	1	6	2
3·5	4·0	4·0	4·5
14·9	11·0	11·1	12·0
5·7	24·8	27·0	26·6
75·9	60·2	57·9	56·9
11,220	12,715	12,720	12,320
2160–2800	2650	2460	2675
Non-agglomerate		Fair	
0	13		
0	1–2·5		
Negative	−158 (1)		
	73·7		
	4·1		
	0·8		
0·1	1·0	0·7	1·0
	5·4		
Anthracite	Medium volatile to high volatile A bituminous		
455—Anthracite	169—Parabituminous		
	52·7		53·0
	37·9		37·7
	69·8	65·0	69·1

ANALYSES OF ASH— (Bulkley Valley)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	63·6	21·5	3·6	3·3	1·8	—	0·5	0·4	0·7	1·0	3·7

REMARKS—
(1) Top and middle benches of seam show a swelling index of approx. +125.

Province	BRITISH COLUMBIA (CENTRAL)
Area	Telkwa
Operator	Telkoal Co. Ltd. (1)
Mine	Telkoal (Aveling)
Trade name	**TELKOAL; AVELING**
Output.....approx. tons/annum	15-25,000
Location of Mine	S. bank of Telkwa River, 6 mi. N.E. of Telkwa
Seam and Formation	Betty Seam—Lower Cretaceous

Size	Lump	Stoker	Blacksmith (2)	Slack
Screen limits at mine.....in.				
No. of samples	3	1	3	2
Chemical Properties—				
Proximate Analysis (As received)—				
Moisture.....%	3·5	4·0	4·0	5·0
Ash.....%	8·6	8·0	3·1	12·5
Volatile matter.....%	27·3	28·4	32·6	26·6
Fixed carbon.....%	60·6	59·6	60·3	55·9
Calorific value (As received).....B.t.u./lb.	13,205	13,180	14,100	12,160
Ash softening temperature.....°F.	2750+	2750+	2545	2750+
Caking Properties—				
Volatile matter residue—950°C	Fair	Fair	Good	Fair
Caking index (Gray)				
Swelling Properties—				
Swelling index (A.S.T.M.)	1		2·5-4	1
Swelling index (F.R.L.)	−100		600	−100
Ultimate Analysis (As received)—				
Carbon.....%	76·2			
Hydrogen.....%	4·2			
Nitrogen.....%	0·8			
Sulphur.....%	0·9	0·8	1·2	0·9
Oxygen.....%	5·8			
Classification by Rank—				
A.S.T.M.	Medium vol. to high volatile A bituminous			
S.V.I.	168—E: Parabituminous			
Physical Properties—				
Bulk density.....lb./cu. ft.	53·5	46·0	52·0	
cu. ft./ton	37·4	43·5	38·5	
Grindability index			68·4	

Analyses of Ash— (Telkoal; Aveling)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	MnO	Na_2O	K_2O	P_2O_5	TiO_2	SO_3
%	54·8	29·2	7·4	2·4	0·4	0·03	0·5	0·5	0·5	1·1	1·5

Remarks—

(1) Previously Aveling Coal Co. Ltd. Present mine closed since 1947.

(2) Blacksmith coal was specially mined, coming from the top 3 ft. bench of the seam.

BRITISH COLUMBIA (NORTH EAST) **Peace River** GENERAL (1)	BRITISH COLUMBIA (NORTH EAST) **Peace River** GENERAL (3)
NON-COKING COALS	COKING COALS
Very Small	Very Small
Approx. 55° and 56° latitude, 120° longitude S.W. and W. portions in vicinity of Fort St. John, Hudson Hope and Little Prairie	In vicinity of Gething and Hasler Creeks, approx. 55° and 56° latitude, 120° longtitude, S.W. and W. portions in vicinity of Fort St. John, Hudson Hope and Little Prairie.
Lower Cretaceous	Lower Cretaceous
Mine Run and Prospect Samples	Prospect samples
32	16
2·5 6·7 (2) 19·9 70·9 13,325 2020–2850+	1·3 4·0 22·7 72·0 14,800 2270
Non-agglomerate to agglomerate	Fair to Good
Negative	4·0
0·7	0·6
Border of low and medium volatile bituminous 186—Orthobituminous	Low to medium volatile bituminous 175–195—Ortho to metabituminous

REMARKS—

(1) Operators in 1952:
   (*a*) Gething, King—East slope of Portage Mountain, 12 miles W. of Hudson Hope.
   (*b*) Peace River Coal Mines Ltd.—West Slope of Portage Mountain, 13 miles W. of Hudson Hope.
   (*c*) Resekke, J. (Packwood mine)—Butler Range, 23 miles W. of Hudson Hope.

(2) Ash varied from 6·0% to 19·5%.

(3) Very little mining, except at Hasler Creek up to 1948 (see Hasler mine).

Province	BRITISH COLUMBIA (NORTH EAST)
Area	**Hasler Creek**
Operator	(1)
Mine	—
Trade name	—
Output.....approx. tons/annum	—
Location of Mine	On Hasler Creek about 8 mi. from its junction with Pine River. Some 18 mi. S.W. of Little Prairie.
Seam and Formation	Lower Cretaceous
Size	Mine Run
Screen limits at mine.....in.	
No. of samples	6
CHEMICAL PROPERTIES—	
Proximate Analysis (As received)—	
Moisture.....%	2·1
Ash.....%	4·5
Volatile matter.....%	19·9
Fixed carbon.....%	73·5
Calorific value (As received).....B.t.u./lb.	14,605
Ash softening temperature.....°F.	2270
Caking Properties—	
Volatile matter residue—950°C	Good
Caking index (Gray)	
Swelling Properties—	
Swelling index (A.S.T.M.)	4·0
Swelling index (F.R.L.)	
Ultimate Analysis (As received)—	
Carbon.....%	83·8
Hydrogen.....%	4·5
Nitrogen.....%	1·3
Sulphur.....%	0·5
Oxygen.....%	3·3
Classification by Rank—	
A.S.T.M	Low volatile bituminous
S.V.I	
PHYSICAL PROPERTIES—	
Bulk density.....lb./cu. ft.	59·0
cu. ft./ton	33·9
Grindability index	91·3

REMARKS—

(1) Hasler Creek Coal Co. Ltd. organized in 1943 and closed down in 1947. B.C. Coal Control mined about 200 tons here in 1949 for special locomotive and other burning tests published by Province of B.C. in 1949 under title "Report of Tests on Hasler Creek Coal conducted by Dept. of Railways in Locomotive and Steam Plants".

BRITISH COLUMBIA (VANCOUVER ISLAND)

Comox

CANADIAN COLLIERIES (DUNSMUIR) LTD.

COMOX No. 5; COMOX No. 8 (1); TSABLE RIVER (2)

COMOX

400-575,000 (3)

No. 5—1 mi. N.W. of Cumberland; No. 8—Bevan Lake (Trail Road)

No. 8—Upper Cretaceous

Mine Run	Lump, Egg, Cobble	Nut, Pea, Stoker, Washed Smalls	Slack	Fines
	(4)	(5)	0 x $\frac{7}{8}$ rd.	0 x $\frac{3}{16}$ rd.
5	38	29	11	3
3·5	2·5	4·0	5·5	6·0
13·8	11·6	13·8	14·2	15·6
31·3	32·2	30·4	30·4	30·2
51·4	53·7	51·8	49·9	48·2
12,320	12,970	12,365	12,115	11,945
2170	2115	2290	2250	2260
		Fair to Good		
		65		
		6-8		
		833		
69·1				
4·5				
1·0				
2·4	2·0	2·1	2·5	2·8
5·7				
		High volatile A bituminous		
		175—Border of Para and Orthobituminous		
	50·7	48·5-52·0	52·0	
	39·5	41·2-38·5	38·5	
65·0		76·0	67·0	68·6

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	0·8	17·4

REMARKS—

(1) The Comox No. 5 mine closed since 1947 and No. 8 in early 1953.

(2) The Tsable River mine product is included in the Union Bay washery output.

(3) This is total output for Comox and Nanaimo Collieries.

(4) Lump—+6 in.; Cobble or Egg—3 x 6 in. rd. (rescreened on $\frac{7}{8}$ in .sq. mesh for distribution in Vancouver).

(5) 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. (referred to as Stoker Size). Washed Smalls—0 x $\frac{3}{16}$ in.

Province	BRITISH COLUMBIA (VANCOUVER ISLAND)
Area	**Nanaimo**
Operator	CANADIAN COLLIERIES (DUNSMUIR) LTD. (1)
Mine	WELLINGTON No. 10, BRIGHT
Trade name	**LADYSMITH; WELLINGTON; OLD WELLINGTON; HI-CARBON**
Output.....approx. tons/annum	(See Comox)
Location of Mine	In vicinity of Nanaimo, S. Wellington and Extension.
Seam and Formation	Douglas (No. 1), Wellington (No. 8)—Upper Cretaceous

Size	Mine Run	Lump (2)	Nut	Pea	Slack and Washed Smalls
Screen limits at mine.....in.		+ 2½ rd.	(3)	$\frac{3}{16}$ x $\frac{7}{8}$ rd.	0 x 1½ or $\frac{3}{16}$ rd.
No. of samples	4	48	9	6	12
CHEMICAL PROPERTIES—					
Proximate Analysis (As received)—					
Moisture.....%	5·0	3·5	4·0	4·0	6·0
Ash.....%	13·0	12·7	13·9	13·2	13·5
Volatile matter.....%	33·2	36·1	36·5	35·7	35·0
Fixed carbon.....%	48·8	47·7	45·6	47·1	45·5
Calorific value (As received).....B.t.u./lb.	12,155	12,330	12,185	12,250	11,840
Ash softening temperature.....°F.	2305	2260	2390	2300	2280
Caking Properties—					
Volatile matter residue—950°C			Fair		
Caking index (Gray)			45–63		
Swelling Properties—					
Swelling index (A.S.T.M.)			1–6		
Swelling index (F.R.L.)			—60 to 520 (Average 256)		
Ultimate Analysis (As received)—					
Carbon.....%	68·2				
Hydrogen.....%	4·8				
Nitrogen.....%	1·4				
Sulphur.....%	0·4	0·7	0·5	0·5	0·8
Oxygen.....%	7·2				
Classification by Rank—					
A.S.T.M.			High volatile A bituminous		
S.V.I.			155—Subbituminous		
PHYSICAL PROPERTIES—					
Bulk density.....lb./cu. ft.		49·7	47·0	48·5	52·0
cu. ft./ton		40·3	42·6	41·2	38·5
Grindability index	67·3				75·2

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
%	38·8	20·9	6·8	19·7	4·6	0·08	1·1	0·9	0·8	1·1	3·8

REMARKS—

(1) Coal cleaned in wet washing plant at Nanaimo.

(2) Rescreened for distribution at Vancouver on $\frac{7}{8}$ in. sq. mesh.

(3) Nut may be: No. 1 Nut—1½ x 2½ in. rd. at mine or $\frac{7}{8}$ in. sq. x 2½ in. rd. at Vancouver distribution. No. 2 Nut—$\frac{7}{8}$ sq. x 1½ in. rd. (called Douglas Nut, but may be from any seam).

BRITISH COLUMBIA (VANCOUVER ISLAND)

Nanaimo

ROSS AND CARROLL
CASSIDY No. 7 (1)
CASSIDY—WELLINGTON

2000
Cassidy

Upper Cretaceous

Lump	Stoker
+3	
1	1
3·5	4·0
11·7	17·7
39·8	36·3
45·1	42·0
12,540	11,430
2070	2250
Poor	Poor
0·9	1·1

REMARKS—
(1) Up to 1950 operated Cassidy No. 5 mine, a salvaging operation.

Province	NORTHWEST TERRITORIES
Area	**Great Bear Lake**
Operator	Eldorado Mining and Refining Co., Ltd.
Mine	Prospects
Trade name	—
Output.....approx. tons/annum	Nil
Location of Mine	Longitude 121° 37′, Latitude 60° 7′ 15″ (1)
Seam and Formation	Several Seams

Size	Outcrop Samples	
Screen limits at mine.....in.	Range	Average
No. of samples	21	
Chemical Properties—		
Proximate Analysis (As received)—		
Moisture.....%	32·2–48·9	40·5
Ash.....%	4·2–22·8	9·5
Volatile matter.....%	23·5–27·4	25·5
Fixed carbon.....%	19·5–24·4	24·5
Calorific value (As received).....B.t.u./lb.	4,515–5,505	5,470
Ash softening temperature.....°F.	2160–2580	2345
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	
Ultimate Analysis (As received)—		
Carbon.....%		
Hydrogen.....%		
Nitrogen.....%		
Sulphur.....%	0·1–0·9	0·3
Oxygen.....%		
Analyses for Classification—		
Capacity moisture.....%		31·9
B.t.u./lb.....(capacity moisture basis)		6,260
Classification by Rank—		
A.S.T.M.	Lignite	
S.V.I.	77: Peat—bordering brown lignite	

Remarks—

(1) From west shore of Douglas Bay in Scented Hills. Douglas Bay is 10 mi. W. of Etochs Pt. in eastern tip of land separating Smith and Keith Arms of Great Bear Lake.

Province	YUKON
Area	**Kluane Lake**
Operator	—
Mine	PROSPECTS
Trade name	—
Output ..... approx. tons/annum	—
Location of Mine	Sheep Creek and Halfred Creek
Seam and Formation	Several (1)

District	Sheep Creek	Halfred Creek
Screen limits at mine ..... in.		
No. of samples	2	1
CHEMICAL PROPERTIES—		
Proximate Analysis (As received)—		
Moisture ..... %	21·8	10·6
Ash ..... %	10·6	9·7
Volatile matter ..... %	34·8	40·0
Fixed carbon ..... %	32·8	39·7
Calorific value (As received) ..... B.t.u./lb.	8,460	10,630
Ash softening temperature ..... °F.		2300
Caking Properties—		
Volatile matter residue—950°C	Non-agglomerate	
Caking index (Gray)		
Swelling Properties—		
Swelling index (A.S.T.M.)	0	0
Swelling index (F.R.L.)	0	0
Ultimate Analysis (As received)—		
Carbon ..... %		
Hydrogen ..... %		
Nitrogen ..... %		
Sulphur ..... %	1·6	0·2
Oxygen ..... %		
Analyses for Classification—		
Capacity moisture ..... %	21·8	10·6
B.t.u./lb. ..... (capacity moisture basis)	8,460	10,630
Classification by Rank—		
A.S.T.M.	(2)	(3)
S.V.I.		

REMARKS—

(1) On Sheep Creek—three seams: 30′ thick, 4′ thick and 6′ thick.

(2) Subbituminous B.

(3) Probably High volatile C bituminous.

Province	YUKON
Area	**Carmacks**
Operator	Yukon Coal Co. Limited
Mine	Tantalus Butte
Trade name	**TANTALUS BUTTE**
Output.....approx. tons/annum	3-4,000
Location of Mine	Carmacks, Yukon—on Lewes River, approx. 100 mi. N.W. of Whitehorse.
Seam and Formation	A 9 ft. seam

Size	Mine Run and Face Samples
Screen limits at mine.....in.	
No. of samples	14
Chemical Properties—	
Proximate Analysis (As received)—	
Moisture.....%	4·0
Ash.....%	13·5
Volatile matter.....%	31·7
Fixed carbon.....%	50·8
Calorific value (As received).....B.t.u./lb.	11,445
Ash softening temperature.....°F.	2265
Caking Properties—	
Volatile matter residue—950°C	Non-agglomerate to Poor
Caking index (Gray)	
Swelling Properties—	
Swelling index (A.S.T.M.)	1
Swelling index (F.R.L.)	41
Ultimate Analysis (As received)—	
Carbon.....%	68·2
Hydrogen.....%	4·4
Nitrogen.....%	0·9
Sulphur.....%	0·4
Oxygen.....%	8·6
Analyses for Classification—	
Capacity moisture.....%	
B.t.u./lb.....(capacity moisture basis)	
Classification by Rank—	
A.S.T.M	High volatile B bituminous
S.V.I	139—Subbituminous
Physical Properties—	
Bulk density.....lb./cu. ft.	60·0
cu. ft./ton	33·3
Grindability index	75–102

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	20·0	4·2	16·7	5·4	0·1	0·2	0·9	0·1	1·0	3·3

APPENDIX I

Average and Typical Analyses of United States (Pennsylvania) and British (Welsh and Scotch) Anthracites

In view of the fact that, especially in central and eastern Canada, anthracite coals from the United States and Great Britain compete with Canadian coals, either average or typical analyses of these coals (depending on availability), are presented in the following tables.

The analyses of the British anthracites are averages calculated from data on samples collected by the Fuels Division, over a period of years. The average analyses of the United States (Pennsylvania) anthracites were calculated, unless otherwise indicated, from data published by the U.S. Bureau of Mines in Report of Investigation 4934, February 1953, entitled *Analyses of Tipple and Delivered Samples of Coal—Collected during the Fiscal Year 1951.* These were supplemented by typical or specimen analyses published in U.S. Bureau of Mines Bulletin 446, entitled *Typical Analyses of Coals of the United States,* published in 1942. Where insufficient data was available from these two sources it was supplemented by data from U.S. Bureau of Mines Technical Paper 659, entitled *Analyses of Pennsylvania Anthracite Coals,* published in 1944.

Size Specifications for United States Anthracites

The Standard Anthracite Specifications approved and adopted by the Anthracite Committee in the U.S. and effective since July 28th, 1947, are as follows:

Size of Coal	*Test Screen: Round in. Through*	*Over*	*Oversize Maximum %*	*Undersize Maximum %*
Broken	$4\frac{3}{8}$	$3\frac{1}{4}$ or 3	—	15
Egg	$3\frac{1}{4}$ or 3	$2\frac{7}{16}$	5	15
Stove	$2\frac{7}{16}$	$1\frac{5}{8}$	$7\frac{1}{2}$	15
Nut	$1\frac{5}{8}$	$\frac{13}{16}$	$7\frac{1}{2}$	15
Pea	$\frac{13}{16}$	$\frac{9}{16}$	10	15
Buckwheat (No. 1)	$\frac{9}{16}$	$\frac{5}{16}$	10	15
Rice (No. 2)	$\frac{5}{16}$	$\frac{3}{16}$	10	17
Barley (No. 3)	$\frac{3}{16}$	$\frac{3}{32}$	10	20
No. 4	$\frac{3}{32}$	$\frac{3}{64}$	20	30
No. 5	$\frac{3}{64}$	—	30	No Limit

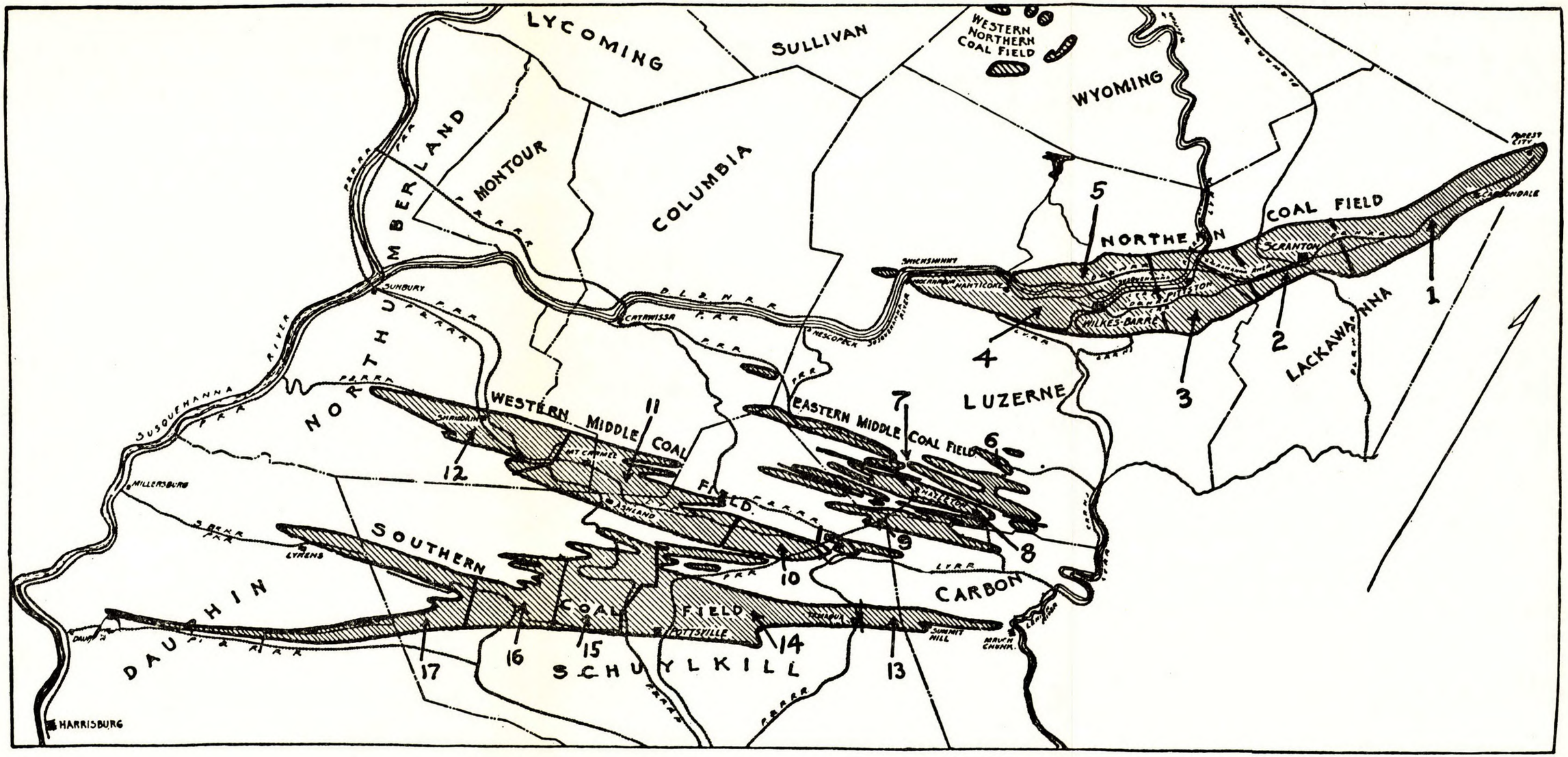
Size Specifications for British Anthracites Sold in Canada

The sizes of Welsh and Scotch anthracites prepared for sale in Canada were chosen to compare with the sizes of U.S. anthracites and at the same time take into account and allow for the fact that the British anthracites are appreciably more friable than those originating in the United States. These sizes have not been standardized and have been altered from time to time. The data for the sizes were obtained from the major importer and are as follows:

Size of Coal	*Preparation Screens Used*
Cobble	Over 3 in. rd. (up to 1949)
Furnace	5 or $5\frac{1}{2}$ x 2 in. rd. (since 1949)
Stove	$1\frac{5}{8}$ in. rd. x $\frac{11}{16}$ in. sq. (up to 1949)
Nut	$1\frac{1}{8}$ in. rd. x $\frac{11}{16}$ in. sq. (up to 1949)
Range	2 x $\frac{3}{4}$ in. rd. (since 1949) and apparently replaces the stove and nut sizes previously prepared.
Buckwheat or Blower	$\frac{1}{4}$ x $\frac{3}{4}$ in. rd. (since 1949)
Screenings	0 x $\frac{1}{4}$ in. rd. (since 1949)

MAP OF THE ANTHRACITE COAL FIELDS OF PENNSYLVANIA

SHOWING MINING DISTRICTS



MINING DISTRICTS

No. 1—Carbonate.
No. 2—Scranton.
No. 3—Pittston.
No. 4—Wilkes-Barre.
No. 5—Plymouth.
No. 6—Green Mountain.
No. 7—Black Creek.
No. 8—Hazleton.
No. 9—Beaver Meadow.
No. 10—East Mahanoy.
No. 11—West Mahanoy.
No. 12—Shamokin.
No. 13—Panther Creek.
No. 14—East Schuylkill.
No. 15—West Schuylkill.
No. 16—Lorberry.
No. 17—Lykens Valley.

UNITED STATES ANTHRACITES*

State	PENNSYLVANIA
Area	**CARBON COUNTY (Southern and Eastern Middle Field)**
Location of Mines	Junedale, Lansford, Audenried, Beaver Meadows, Nesquehoning

Size	Egg	Stove	Buck-wheat (No. 1)	Rice (No. 2)	Chest-nut	Pea
Screen limits at mine.....in rd.	(1)	(1)	(1)	(1)	(1)	(1)
No. of samples	(3)	(3)	10	(3)	(3)	(3)
CHEMICAL PROPERTIES—						
Proximate Analysis (As received)—						
Moisture.....%	4·3	3·5	5·4	4·0	4·3	4·0
Ash.....%	8·0	9·5	9·6	11·8	10·0	10·8
Volatile matter.....%	2·9	3·9	4·4	3·8	3·5	3·1
Fixed carbon.....%	84·8	83·1	80·6	80·4	82·2	82·1
Calorific value (As received).....B.t.u./lb.	12,985	12,885	12,540	12,320	12,620	12,600
Ash softening temperature(2).....°F.	2910+	2910+	2910+	2910+	2910+	2910+
Caking Properties—						
Volatile matter residue—950°C.....	Non-agglomerate					
Caking index (Gray).....	0					
Swelling Properties—						
Swelling index (A.S.T.M.).....	0					
Ultimate Analysis (As received)—						
Sulphur.....%	0·6	0·7	0·5	0·7	0·5	0·5
Classification by Rank—						
A.S.T.M.....	Anthracite					

REMARKS—

* Average analyses unless otherwise indicated, calculated from data published by U.S. Bureau of Mines in Report of Investigation 4934, February 1953, entitled "Analyses of Tipple and Delivered Samples of Coal—Collected during the Fiscal Year 1951"

(1) According to U.S. Standard Anthracite Specifications.

(2) From U.S. Bureau of Mines Technical Paper 659 "Analyses of Pennsylvania Anthracite Coals", 1944. Only those coals from Nesquehoning show F.P.A. values under 2900°F., values as low as 2470°F. being recorded.

(3) From U.S. Bureau of Mines Bulletin 446 "Typical Analyses of Coals of the United States", 1942.

UNITED STATES ANTHRACITES*

State	PENNSYLVANIA						
Area	**COLUMBIA COUNTY (Western Middle Field)**						
Location of Mines	Centralia						
Size	Egg	Stove	Chest-nut	Pea	Buck-wheat	Rice	Barley
Screen limits at mine.....in.	(1)	(1)	(1)	(1)	(1)	(1)	(1)
No. of samples							
CHEMICAL PROPERTIES—							
Proximate Analysis (as received)—							
Moisture.....%	4·3	3·5	4·3	4·0	4·5	4·5	7·0
Ash.....%	10·4	10·1	10·7	14·1	13·0	12·1	10·8
Volatile matter.....%	3·6	4·2	3·6	3·8	3·6	3·7	3·5
Fixed carbon.....%	81·7	82·2	81·4	78·1	78·9	79·7	78·7
Calorific value (As received) B.t.u./lb.	12,730	12,940	12,660	12,190	12,320	12,420	12,270
Ash softening temperature(2)...°F.	2910+	2910+	2910+	2910+	2910+	2910+	2910+
Caking Properties—							
Volatile matter residue—950°C..	Non-agglomerate						
Caking index (Gray).....	0						
Swelling Properties—							
Swelling index (A.S.T.M.).....	0						
Ultimate Analysis (As received)—							
Sulphur.....%	0·7	0·6	0·6	0·6	0·7	0·6	0·6
Classification by Rank—							
A.S.T.M.....	Anthracite						

REMARKS—

* From U.S. Bureau of Mines Bulletin 446 "Typical Analyses of Coals of the United States", 1942.

(1) According to U.S. Standard Anthracite Specifications.

(2) From U.S. Bureau of Mines Technical Paper 659 "Analyses of Pennsylvania Anthracite Coals", 1944.

UNITED STATES ANTHRACITES*

PENNSYLVANIA

DAUPHIN COUNTY

(Southern Field)

Harrisburg, Lykens, Middletown, Williamstown

Egg	Stove	Chestnut	Pea
(1)	(1)	(1)	(1)
(4)	(4)	28	3
4·3	3·5	2·4	2·4
8·9	9·3	14·0	15·7
7·4	7·6	8·0	7·2
79·4	79·6	75·6	74·7
13,330	13,370	12,720	12,390
2200(3)	2130(3)	2660(2)	2350(3)
Non-agglomerate			
0			
0			
0·7	0·6	0·6	0·6
Anthracite			

REMARKS—

* Average analyses, unless otherwise indicated, calculated from data published by U.S. Bureau of Mines in Report of Investigations 4934, February, 1953.

(1) According to U.S. Standard Anthracite Specifications.

(2) Average softening point of ash for this size calculated from data published by U.S. Bureau of Mines in 1944 in Technical Paper 659, was 2275°F.

(3) Average softening point of ash for this size from data published in U.S. Bureau of Mines Technical Paper 659.

(4) From U.S. Bureau of Mines Bulletin 446 "Typical Analyses of Coals of the United States", 1942.

UNITED STATES ANTHRACITES*

State..... PENNSYLVANIA
Area..... **LACKAWANNA COUNTY (Northern Field)**
Location of Mines..... Carbondale, Jessup, Scranton, Throop, Winton.

Size	Egg	Stove	Chestnut	Pea	Buck. No. 1	Rice No. 2	Barley No. 3
Screen limits at mine.....in. rd.	(1)	(1)	(1)	(1)	(1)	(1)	(1)
No. of samples.....	2	10	111	74	95	1	9
CHEMICAL PROPERTIES—							
Proximate Analysis (As received)—							
Moisture.....%	4·8	4·7	4·7	5·0	5·2	2·6	5·4
Ash.....%	13·5	10·5	10·5	10·0	10·2	13·3	11·8
Volatile matter.....%	7·0	7·3	7·1	6·9	6·7	6·2	6·4
Fixed carbon.....%	74·7	77·5	77·7	78·1	77·9	77·9	76·4
Calorific value (As received) B.t.u./lb.	12,200	12,705	12,710	12,725	12,670	12,620	12,380
Ash softening temperature.....°F.		2910+	2910+	2910+	2910+		
Caking Properties—							
Volatile matter residue—950°C....	Non-agglomerate						
Caking index (Gray).....	0						
Swelling Properties—							
Swelling index (A.S.T.M.).....	0						
Ultimate Analysis (As received)—							
Sulphur.....%	0·7	0·5	0·6	0·6	0·6	0·7	0·8
Classification by Rank—							
A.S.T.M.....	Anthracite						

REMARKS—

* Average analyses calculated from data published by U.S. Bureau of Mines in Report of Investigations 4934, February 1953.

(1) According to U.S. Standard Anthracite Specifications.

UNITED STATES ANTHRACITES*

PENNSYLVANIA

LUZERNE COUNTY
(Northern and Eastern Middle Field)

Wilkes-Barre, Ashley, Avoca, Duryea, Exeter, Fern Glen, Glen Lyon, Kingston, Laflin, Nanticoke, Pittston and Wanamie

Egg	Stove	Chestnut	Pea	Buck, No. 1	Rice No. 2	Barley No. 3
(1)	(1)	(1)	(1)	(1)	(1)	(1)
1	4	9	19	88	1	7
4·2	3·5	4·6	5·1	4·9	8·6	7·2
12·7	10·6	11·3	11·1	10·7	13·1	12·5
5·9	5·4	6·0	5·7	5·8	5·5	5·4
77·2	80·5	78·1	78·1	78·6	72·8	74·9
12,350	12,865	12,550	12,510	12,660	11,590	11,930
2910+	2910+	2910+	2910+	2910+		2910+
			Non-agglomerate 0			
			0			
0·7	0·7	0·7	0·8	0·7	0·6	0·6
			Anthracite			

REMARKS—

* Average analyses calculated from data published by U.S. Bureau of Mines in Report of Investigations 4934, February 1953.

(1) According to U.S. Standard Anthracite Specifications.

UNITED STATES ANTHRACITES*

State	PENNSYLVANIA
Area	**NORTHUMBERLAND COUNTY (Western Middle Field)**
Location of Mines	Atlas, Locust Summit, Natalie, Shamokin, Trevorton

Size	Stove	Chest-nut	Pea	Buck. No. 1	Rice No. 2	Barley No. 3
Screen limits at mine.....in. rd.	(1)	(1)	(1)	(1)	(1)	(1)
No. of samples	3	29	55	202	6	38
CHEMICAL PROPERTIES—						
Proximate Analysis (As received)—						
Moisture.....%	2·0	3·1	3·5	3·3	5·1	5·7
Ash.....%	10·5	10·1	10·6	9·1	10·1	11·2
Volatile matter.....%	9·4	8·1	7·1	7·9	7·4	7·7
Fixed carbon.....%	78·1	78·7	78·8	79·7	77·4	75·4
Calorific value (As received)...B.t.u./lb.	13,430	13,260	12,995	13,135	12,870	12,525
Ash softening temperature.....°F.		2910+	2910+	2910+		2910+
Caking Properties—						
Volatile matter residue—950°C.....			Non-agglomerate			
Caking index (Gray).....			0			
Swelling Properties—						
Swelling index (A.S.T.M.).....			0			
Ultimate Analysis (As received)—						
Sulphur.....%	1·0	1·0	0·9	0·9	0·9	0·8
Classification by Rank—						
A.S.T.M.....			Anthracite			

REMARKS—

* Average analyses calculated from data published by U.S. Bureau of Mines in Report of Investigations 4934, February 1953.

(1) According to U.S. Standard Anthracite Specifications.

UNITED STATES ANTHRACITES*

PENNSYLVANIA

SCHUYLKILL COUNTY

(Eastern and Western Middle, and Southern Fields)

Tamaqua, Tremont, Zerbe, Ashland, Coaldale, Darkwater, Donaldson, Gilberton, Girardville, Goodspring, Llewellyn, Mary O, Minersville, Morea, Pine Grove, Pottsville, St. Clair, St. Nicholas, Shenandoah.

Egg	Stove	Chestnut	Pea	Buck. No. 1	Rice No. 2	Barley No. 3
(1)	(1)	(1)	(1)	(1)	(1)	(1)
1	1	10	12	97	15	58
4·2	3·7	4·8	5·5	5·1	3·5	7·1
10·8	11·0	11·7	11·0	11·5	12·0	12·5
4·5	5·9	5·4	5·8	5·4	5·5	5·5
80·5	79·4	78·1	77·7	78·0	79·0	74·9
12,670	12,710	12,430	12,455	12,395	12,570	11,905
2910+		2745				2910+
			Non-agglomerate 0			
			0			
0·5	0·5	0·5	0·6	0·6	0·6	0·5
			Anthracite			

REMARKS—

* Average analyses calculated from data published by U.S. Bureau of Mines in Report of Investigations 4934, February 1953.

(1) According to U.S. Standard Anthracite Specifications.

BRITISH ANTHRACITES*

Principality	WALES			
Area	**GLAMORGANSHIRE**			
Location of Mines	Swansea District			
Size	Cobble, Furnace	Stove	Nut	Blower
Screen limits at mine ..... in.	(1)	$1\frac{5}{8}$ x $\frac{11}{16}$	$1\frac{1}{8}$ x $\frac{11}{16}$	$\frac{1}{4}$ x $\frac{3}{4}$ rd.
No. of samples	14	2	4	73
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture ..... %	2·5	2·5	2·5	2·5
Ash ..... %	4·7	5·3	5·2	5·2
Volatile matter ..... %	8·8	8·7	8·7	8·7
Fixed carbon ..... %	84·0	83·5	83·6	83·6
Calorific value (As received) ..... B.t.u./lb.	14,170	14,165	14,165	14,165
Ash softening temperature ..... °F.	2370	2370	2370	2370
Caking Properties—				
Volatile matter residue—950°C	Non-agglomerate			
Caking index (Gray)	0			
Swelling Properties—				
Swelling index (A.S.T.M.)	0			
Ultimate Analysis (As received)—				
Sulphur ..... %	0·9	0·9	0·9	0·9
Classification by Rank—				
A.S.T.M	Semianthracite			
PHYSICAL PROPERTIES—				
Bulk density ..... lb./cu. ft.	48·0			46·0
cu. ft./ton	41·7			43·5

REMARKS:—*Average analyses calculated from data collected by the Fuels Division over a period of years up to end of 1952.

(1) Cobble—Over 3 in. rd. Furnace—5 or $5\frac{1}{2}$ x 2 in. rd.

BRITISH ANTHRACITES*

Principality	SCOTLAND			
Area				
Location of Mines	Scotland			
Size	Cobble	Nut	Beans	Buckwheat
Screen limits at mine ... in.	Over 3 in.	$1\frac{1}{8}$ x $\frac{11}{16}$		$\frac{1}{4}$ x $\frac{3}{4}$
No. of samples	3	2	3	8
CHEMICAL PROPERTIES—				
Proximate Analysis (As received)—				
Moisture ... %	3·1	3·5	3·6	4·9
Ash ... %	5·5	6·4	6·8	8·7
Volatile matter ... %	7·1	7·4	8·1	8·2
Fixed carbon ... %	84·3	82·7	81·5	78·2
Calorific value (As received) ... B.t.u./lb.	13,865	13,545	13,505	12,970
Ash softening temperature ... °F.	2750+	2750+	2750+	2750+
Caking Properties—				
Volatile matter residue—950°C ...	Non-agglomerate			
Caking index (Gray) ...	0			
Swelling Properties—				
Swelling index (A.S.T.M.) ...	0			
Ultimate Analysis (As received)—				
Sulphur ... %	0·6	0·8	0·8	0·8
Classification by Rank—				
A.S.T.M ...	Semianthracite			
PHYSICAL PROPERTIES—				
Bulk density ... lb./cu. ft.				50·4
cu. ft./ton				39·7

REMARKS:—*Average analyses calculated from data collected by the Fuels Division over a period of years up to end of 1940.

APPENDIX II

Range of Ash—Dry Basis; Calorific Value—Dry Mineral Matter Free

Name of Company	Mines	Size	Ash Per Cent			Cal. Value Dry-MM Free B.t.u./lb.	Number of Samples
			Min.	Max.	Average		
		NOVA SCOTIA					
Sydney Area							
Bras d'Or Coal Co., Ltd.	Franklin, Colonial	Mine Run	9·9	18·2	13·1	14,795	18
		Lump and Egg	9·5	17·9	12·7	14,863	22
		Stoker	7·9	13·9	11·5	14,921	9
		Slack	10·2	24·0	15·0	14,798	68
		Average				14,844	
Four Star Collieries Ltd.	Four Star	Lump	8·1	12·2	10·8	14,780	4
		Stoker	—	—	9·5	14,865	1
		Slack	12·1	18·4	15·2	14,720	5
		Average				14,788	
Dominion Coal Co., Ltd.	1B, 2, 4, 9, 11, 12, 16, 18, 20, 24, 25, 26.	Lump	5·1	17·3	9·2	15,365	60
		Screened Mine Run	8·8	13·4	10·1	15,391	15
		Mine Run	5·2	13·8	9·3	15,406	69
		Stoker	7·3	7·9	7·6	15,363	2
		Nut Slack	7·1	16·2	9·7	15,406	64
		Slack	6·3	20·8	11·0	15,289	321
		Average				15,370	
Indian Cove Coal Co., Ltd.	Greener	Mine Run	10·8	16·9	13·6	14,790	5
		Lump	11·1	17·6	14·0	14,829	16
		Slack	12·4	26·7	17·2	14,792	11
		Average				14,804	

Range of Ash—Dry Basis; Calorific Value—Dry Mineral Matter Free—*Continued*

Name of Company	Mines	Size	Ash Per Cent			Cal. Value Dry-MM Free B.t.u./lb.	Number of Samples
			Min.	Max.	Average		
Sydney Area—Con.							
Indian Cove Coal Co., Ltd.	Tomson	Lump	12·3	13·3	12·8	14,861	5
Old Sydney Collieries Ltd.	Princess, Florence	Lump	4·0	6·8	5·0	15,239	9
		Slack	3·0	8·5	5·6	15,180	13
		Average				15,204	
Inverness Area							
Dean Evans (St. Rose Basin)	Evans	Screened Mine Run	9·8	12·7	11·4	14,315	3
Inverness Coal Mine (N.S. Gov't.) (Inverness Basin)	Inverness Mine	Mine Run	9·6	18·5	13·8	13,923	7
		Lump	11·1	13·1	12·2	13,886	5
		Slack	12·8	18·2	15·3	13,968	5
		Average				13,925	
Port Hood Coal Mine (Port Hood Basin)	Port Hood	Mine Run, Lump, Slack	13·4	18·6	15·8	14,181	9
Cumberland Area—Springhill							
Cumberland Rly & Coal Co., Ltd.	Springhill	Mine Run	8·1	12·1	9·8	15,257	7
		Lump	4·3	13·5	8·8	15,333	14
		Nut	7·5	11·6	8·9	15,298	3
		Pea Stoker	6·0	19·3	13·3	15,479	49
		Slack	9·0	17·7	11·8	15,374	57
		Average				15,395	
Cumberland Area—Joggins							
Hillcrest Mining Co., Ltd.	Hillcrest (Forty Brine Seam)	Lump	13·3	17·1	14·4	14,652	4
		Slack	23·7	35·1	29·0	14,642	4
		Average				14,647	

Joggins Coal Co., Ltd.	Bayview No. 8 (Forty Brine Seam)	Lump	11·1 — 24·9	16·6	14,718	13
		Slack	22·0 — 36·7	29·6	14,753	24
		Nut	26·9 — 31·2	29·0	14,717	2
		Average			14,740	
Standard Coal Co., Ltd.	Strathcona (Kimberley Seam)	Mine Run	15·5 — 24·8	19·2	14,974	42
		Lump	13·7 — 21·0	16·3	14,809	9
		Slack	14·6 — 35·1	20·5	14,875	6
		Average			14,938	
Riverside Coal Co., Ltd.	Riverside	Lump, Slack	18·0 — 18·6	18·3	14,617	2
Pictou Area—Stellarton						
Acadia Coal Co., Ltd.	Allan, Albion, McBean	Mine Run	10·0 — 17·3	14·2	15,339	16
		Lump	11·2 — 17·8	15·4	15,372	34
		Stoker	12·1 — 12·7	12·5	15,309	3
		Slack	11·6 — 15·8	14·1	15,231	11
		Average			15,335	
Pictou Area—Westville						
Intercolonial Coal Co., Ltd.	Drummond	Mine Run	14·0 — 24·6	19·6	15,277	8
		Screened Lump	14·9 — 24·8	20·9	15,382	27
		Slack	15·2 — 25·0	18·0	15,128	18
		Average			15,280	
Pictou Area—Thorburn						
Greenwood Coal Co., Ltd.	Greenwood	Mine Run	16·4 — 23·4	19·4	14,969	3
		Slack	23·8 — 31·5	26·7	14,928	5
		Lump	15·9 — 18·9	17·3	14,949	8
		Average			14,946	

NEW BRUNSWICK

Minto—North						
Miramichi Lumber Co., Ltd.	Minto, Miramichi	Mine Run	12·4 — 26·8	19·2	15,532	22
		Lump	14·9 — 21·6	17·7	15,515	16
		Slack	15·9 — 33·9	22·1	15,487	27
		Average			15,509	

Range of Ash—Dry Basis; Calorific Value—Dry Mineral Matter Free—*Continued*

Name of Company	Mines	Size	Ash Per Cent			Cal. Value Dry-MM Free B.t.u./lb.	Number of Samples
			Min.	Max.	Average		
Minto—South							
Avon Coal Co., Ltd.	Avon, Winterport	Mine Run	16·2	21·4	18·1	15,366	8
		Lump	15·3	19·9	16·8	15,304	8
		Slack	18·7	25·0	18·8	15,270	11
		Average				15,309	
Wasson, A. W. Ltd.	Rothwell	Mine Run	16·2	21·4	17·8	15,318	22
Miramichi Lumber Co., Ltd.	Miramichi	Mine	13·2	22·3	17·8	15,360	17
		Lump	14·2	17·0	15·0	15,348	4
		Slack	8·6	18·7	18·3	15,313	5
		Average				15,349	
Welton & Henderson, Ltd.†	Black Diamond	Mine Run	13·1	29·4	20·3	15,483	70
		Lump	17·7	26·0	20·0	15,512	4
		Average				15,484	
Minto—Newcastle Bridge							
Newcastle Coal Co., Ltd.	Newcastle	Mine Run	14·9	20·4	17·8	15,502	12
		Lump	14·9	20·3	17·6	15,456	2
		Slack	20·0	24·3	22·2	15,497	2
		Average				15,496	
Minto—Chipman							
King, G. H.		Mine Run	17·4	28·3	24·1	15,605	21
		Lump	17·9	19·5	18·9	15,616	3
		Slack	20·4	22·3	21·3	15,633	3
		Average				15,609	

Beersville (Kent County) Girvan; Glencross; Reid.....		Lump.....	13·5 — 16·9	15·7	14,929	3
		Slack.....	19·5 — 26·7	22·9	15,019	3
		Average.....	.....	.....	14,974	
ONTARIO						
Onakawana Ontario Department of Mines.....		Mine Run.....	7·5 — 21·1	12·5	10,184	35
MANITOBA						
Turtle Mountain District		Mine Run.....	7·5 — 12·3	11·0	11,658	3
SASKATCHEWAN						
Souris Area—Bienfait Eastern Collieries of Bienfait, Ltd.	Eastern.....	Lump, Stove.....	7·1 — 8·5	7·8	12,548	7
		Stoker.....	9·1 — 10·1	9·5	12,553	3
		Average.....	.....	.....	12,550	
Manitoba & Sask. Coal Co., Ltd...	M & S.....	Lump, Cobble, Stove, Nut, Stoker.....	8·1 — 14·2	10·5	12,580	28
		Slack.....	12·2 — 18·1	15·8	12,540	4
		Average.....	.....	.....	12,574	
Western Dominion Coal Mines Ltd.	Strip and Deep Mines.....	Lump, Cobble, Stove.....	5·9 — 12·8	8·8	12,632	39
		Stoker, Pea.....	7·9 — 13·5	9·7	12,691	26
		Bug Dust.....	11·1 — 12·9	11·8	12,609	3
		Average.....	.....	.....	12,654	

Range of Ash—Dry Basis; Calorific Value—Dry Mineral Matter Free—*Continued*

Name of Company	Mines	Size	Ash Per Cent			Cal. Value Dry-MM Free B.t.u./lb.	Number of Samples
			Min.	Max.	Average		
Souris Area—Roche Percée							
Portal Coals Ltd.	Old Mac.	Lump, Cobble, Stove, Nut					
		Stoker	8·1	11·8	10·2	12,697	20
Souris Area—Estevan Division							
Various Operations		Mine Run	11·7	18·2	13·1	12,566	12
Souris Area—All Divisions		Area Average				12,631	
Bengough, Willow Bunch and Wood Mountain Areas							
Various Operations		Mine Run	9·2	22·3	14·2	11,180	32
Shaunavon & East End Areas							
Various Operations		Mine Run	12·2	19·3	15·5	11,481	4

ALBERTA

Ardley Area					10·2	13,006	
Big Valley Area							
Various Operations (Carbonite Corporation of Canada Ltd.)		Mine Run	9·5	19·0	11·9	12,824	4
Brooks Area							
Kleenbirn Collieries Ltd.	Birnwel	Mine Run, Egg, Nut	10·1	16·9	13·4	13,228	7
		Stoker, Pea	12·5	22·0	16·8	13,281	30
		Average				13,271	
Camrose Area							
Camrose Collieries Ltd.	Camrose	Lump	5·4	8·8	7·7	12,730	3

Canadian Dinant Coal Co., Ltd. (closed)	Canadian Dinant	Lump, Stove	6·2 — 10·3	8·3	12,860	6
District A	Several	Lump	6·5 — 10·3	8·2	12,928	13
Districts B & C	Several	Lump	5·4 — 12·2	7·6	12,778	8
Carbon Area						
Various Operations		Mine Run	9·5 — 14·8	12·6	13,268	10
Cascade Area						
Canmore Mines Ltd	Canmore No. 4, 2	Mine Run, Lump, Stove, Nut, Stoker	5·4 — 14·4	9·1	15,542	29
Kananaskis Exploration & Development Co., Ltd	Cascade	Lump, Stove, Nut	11·7 — 19·6	15·2	15,519	10
Cascade Area	Several	Mine Run, Lump, Stove, Nut, Stoker			15,537	
Castor Area (Districts B & C)						
Various Operations		Mine Run, Lump	5·3 — 17·7	9·8	12,574	17
Champion Area						
Various Operations		Mine Run		7·6	13,075	2
Coalspur Area—Val d'Or Seam						
Bryan Mountain Coal Co., Ltd	Bryan	Lump, Mine Run	11·1 — 16·1	14·1	13,358	4
		Slack	12·5 — 22·6	16·0	13,511	7
		Average			13,455	
Foothills Collieries Ltd	Foothills	Lump, Egg, Nut	9·0 — 12·9	11·3	13,679	23
		Slack	9·0 — 16·2	12·6	13,712	3
		Average			13,683	
Lakeside Coals Ltd	Minehead	Lump, Egg. Nut	10·8 — 16·5	13·8	13,488	23
Canadian Collieries (Dunsmuir) Ltd	McLeod River Hard	Lump	9·1 — 11·9	10·1	13,699	8
		Egg, Nut, Stoker	11·3 — 14·6	13·2	13,725	11
		Average			13,714	
		Seam Average			13,610	

Range of Ash—Dry Basis; Calorific Value—Dry Mineral Matter Free—*Continued*

Name of Company	Mines	Size	Ash Per Cent			Cal. Value Dry-MM Free B.t.u./lb.	Number of Samples
			Min.	Max.	Average		
Coalspur Area—Mynheer Seam							
Sterling—Coal Valley Mining Co. Ltd.	Cova, Sterling	Mine Run, Lump	10·7	21·0	15·1	13,651	31
		Stoker, Nut	11·6	28·1	17·6	13,829	36
		Average*				13,746	
		Seam Average				13,746	
Crowsnest Area							
Coleman Collieries Ltd.	Hillcrest-Mohawk	Mine Run, Lump	11·8	25·0	17·1	15,251	5
		Nut, Pea, Slack	11·7	18·4	15·1	15,281	12
		Average				15,272	
Coleman Collieries Ltd.	International	Mine Run	9·3	19·1	14·9	15,206	44
		Slack	12·4	17·0	14·5	15,214	10
		Average				15,207	
Coleman Collieries Ltd.	McGillivray Creek	Mine Run, Lump, Stove	12·0	20·7	14·9	15,426	32
		Stoker, Slack	11·8	19·8	14·7	15,385	12
		Average				15,415	
West Canadian Collieries Ltd.	Bellevue	Mine Run	12·8	23·1	17·4	15,351	18
		Lump	11·4	18·3	14·2	15,347	5
		Slack	10·0	16·2	14·7	15,426	9
		Average				15,371	
West Canadian Collieries Ltd.	Greenhill	Mine Run	10·7	20·9	15·4	15,416	17
		Lump, Stove	7·9	18·8	11·4	15,501	69
		Slack, Stoker	7·2	28·3	14·4	15,480	27
		Average				15,483	

Drumheller Area						
Drumheller I (Drumheller)	Various	All sizes			13,373	
Brilliant Coal Co. Ltd	Brilliant—No. 1258	Lump, stove	6·7 — 12·1	10·1	13,302	7
Century Coals Ltd	Commander—No. 422	Lump, Stove	7·2 — 10·1	8·6	13,232	4
Red Deer Valley Coal Co., Ltd.	Red Deer Valley—No. 402	Lump, Stove	6·6 — 9·2	8·9	13,414	15
		Nut, Slack	9·1 — 17·4	13·9	13,400	46
		Average			13,403	
Drumheller II (Rosedale, Wayne & Willow Creek)	Various	All sizes			13,198	
Arcadia Coal Mines Ltd	Arcadia—No. 1589	Lump, Stove	6·6 — 9·2	7·5	13,166	8
		Nut, Slack	9·1 — 12·7	10·6	13,163	6
		Average			13,165	
Ideal Coal Co., Ltd	Ideal—No. 844	Lump, Stove	8·1 — 14·1	9·7	13,230	5
Midland Coal Mining Co. Ltd	Midland—No. 367	Lump, Stove	6·5 — 10·9	8·5	13,221	14
		Nut, Pea, Stoker	9·0 — 17·0	13·5	13,333	14
		Average			13,277	
Newcastle Collieries Ltd	Newcastle—No. 620	Lump, Stove	9·1 — 14·0	11·9	13,168	18
		Stoker	10·9 — 19·7	14·5	13,308	32
		Average			13,258	
Rosedale Collieries Ltd	Rosedale, Star—Nos. 346, 436	Lump, Stove	5·2 — 14·9	9·0	13,295	59
		Granular Lump	12·1 — 17·9	15·1	13,332	10
		Stoker	11·2 — 28·9	18·9	13,308	34
		Average			13,304	
Sask. Federated Co-ops., Ltd	Hy-Grade—No. 1421	Lump, Stove	7·5 — 10·1	8·7	13,299	5
Wayne Coal Producers Assn, Ltd	Mutual—No. 703	Lump, Stove	7·1 — 11·0	9·2	13,268	6
Western Gem & Jewel Collieries Ltd	Cambrian—No. 1493	Lump, Stove, Nut, Stoker	5·8 — 12·8	7·8	13,164	9

Range of Ash—Dry Basis; Calorific Value—Dry Mineral Matter Free—*Continued*

Name of Company	Mines	Size	Ash Per Cent		Cal. Value Dry-MM Free B.t.u./lb.	Number of Samples
			Min. Max.	Average		
Drumheller Area—Con.						
Drumheller III (East Coulee, Willow Creek, N. Drumheller)	Various	All sizes			13,072	
Aetna Coals Ltd.	Aetna—No. 1511	Lump, Stove	8·6 — 9·8	9·3	13,159	3
Century Coals Ltd.	Atlas—No. 1484	Lump, Egg	7·9 — 10·6	8·9	13,033	14
		Slack	9·8 — 12·1	11·1	12,980	4
		Average			13,021	
Maple Leaf Coal Co. Ltd.	Maple Leaf—No. 728	Lump, Stove	7·9 — 9·6	9·0	12,919	5
The Minute Coal Co.	Minute—No. 1520	Lump, Stove, Nut	9·0 — 17·0	12·8	13,153	9
Monarch Coal Mining Co. Ltd.	Western Monarch—No. 1573	Lump, Stove	8·6 — 10·1	9·4	13,023	6
		Nut, Slack	11·0 — 14·1	13·0	13,085	4
		Average			13,048	
Murray Collieries Ltd.	New Murray—No. 1491	Lump, Stove, Nut	7·5 — 11·5	8·5	13,031	13
		Stoker Nut, Slack	8·8 — 15·3	12·3	13,012	23
		Average			13,019	
Edmonton Area						
Banner Coals Ltd.	No. 428	Lump, Stove	9·5 — 10·5	10·0	12,915	4
Beverly Coal Co. Ltd.	Beverly—No. 1366	Lump, Egg, Nut	6·8 — 10·8	8·2	12,728	3
Bush Mines Ltd.	Bush—No. 701	Lump, Stove	8·3 — 10·0	9·4	12,852	6
Edmonton Collieries Ltd.	New Black Gem—No. 1266	Egg, Nut, Pea	10·0 — 12·1	11·0	12,843	4

The Great West Coal Co., Ltd...	Black Diamond—No. 99.....	Lump, Egg.....	7·4 — 10·7	9·7	12,890	11
		Stoker, Slack.....	11·3 — 14·3	13·4	12,819	5
		Average.....	.....	.....	12,868	
Morinville Colliery Ltd.....	No. 1635.....	Lump, Stove, Nut, Stoker...	8·7 — 12·5	10·0	12,764	4
Ottewell Coal Co.....	Ottewell—No. 91.....	Lump, Stove.....	7·9 — 9·6	8·9	12,884	3
Sundance Mines Ltd.....	No. 129.....	Nut, Stoker.....	17·7 — 20·5	19·1	12,830	2
Edmonton Area—General.....	Various.....	Lump, Egg.....	7·4 — 12·1	9·8	12,857	36
Gleichen Area						
Various Operations.....	.....	Mine Run.....	8·5 — 12·9	10·0	12,896	4
Halcourt Area						
Various Operations.....	.....	Mine Run.....	4·2 — 10·0	6·3	13,890	6
Highwood Area.....	.....	Mine Run and Prospects.....	.....	17·4	15,900	20
Lethbridge Area						
Lethbridge Collieries Ltd.....	Cadillac—No. 1263.....	Lump, Egg, Stoker.....	9·9 — 17·2	12·7	13,759	25
Lethbridge Collieries Ltd.....	Galt—No. 1464.....	Lump, Egg, Stoker.....	8·1 — 16·7	11·7	13,887	32
		Average.....	.....	12·5	13,831	57
Magrath Area						
Various Operations.....	.....	Mine Run.....	8·4 — 13·9	10·4	14,421	3
Mountain Park Area						
Cadomin Coal Co., Ltd.....	No. 693.....	Mine Run.....	10·1 — 18·1	13·4	15,539	23
		Stoker, Slack.....	10·0 — 14·0	11·6	15,611	14
		Average.....	.....	.....	15,566	
Gregg River Collieries.....	No. 1392.....	Mine Run.....	11·4 — 14·2	13·2	15,631	65
Luscar Coals, Ltd.....	Luscar—No. 905.....	Mine Run, Lump.....	10·0 — 17·3	14·6	15,612	14
		Briquettes.....	14·2 — 20·0	16·9	15,960**	4
Mountain Park Coals Ltd.....	Mountain Park—No. 282.....	Mine Run, Lump.....	8·5 — 17·7	12·7	15,557	38
		Area Average.....	.....	.....	15,595	

Range of Ash—Dry Basis; Calorific Value—Dry Mineral Matter Free—*Continued*

Name of Company	Mines	Size	Ash Per Cent		Cal. Value Dry-MM Free B.t.u./lb.	Number of Samples
			Min. Max.	Average		
Nordegg Area						
Brazeau Collieries Ltd.	Nordegg—Nos. 265, 1585.	Mine Run	11·9 — 15·7	14·1	15,815	30
		Briquettes	11·1 — 16·2	13·3	15,932	38
Pakan Area						
Various Operations		Mine Run	6·1 — 18·7	10·0	12,364	5
Pakowki Area						
District A		Mine Run		13·3	12,947	1
District B		Mine Run		10·0	11,997	3
District C		Mine Run		13·3	12,042	1
Pekisko Area						
Various Operations		Mine Run	8·2 — 11·1	10·1	14,783	5
Pembina Area—Wabamun District						
The Alberta Southern Coal Co. Ltd.	Victory—No. 419.	Mine Run, Lump, Stoker	6·5 — 13·4	10·7	12,662	12
Pembina Area—Evansburg District						
Pembina Peerless Coal Co. Ltd.	Pembina—No. 1495.	Mine Run	8·1 — 13·9	11·6	12,706	5
Pincher Area						
Various Operations		Mine Run	11·9 — 18·2	15·5	14,809	5
Redcliff Area						
Various Operations		Mine Run, Lump	7·0 — 10·7	8·3	12,744	6
Saunders Area						
Alexo Coal Co., Ltd.	Alexo—No. 852.	Mine Run, Lump, Stove, Nut	6·1 — 9·1	7·7	13,790	16

Bighorn & Saunders Creek Collieries Ltd.	Bighorn—No. 388	Lump, Stove, Nut	7·4 — 9·9	8·7	13,805	17
		Average			13,798	
Sheerness Area Various Operations		Lump, Cobble	7·8 — 12·1	8·8	12,560	6
Smoky River Area Various Prospects		Mine Run		9·0	15,247	30
Taber Area						
District A Alberta Southern Coal Co. Ltd.	No. 1604	Lump, Egg	11·1 — 16·7	12·2	13,415	16
District B Continental Coal Corp.	No. 1334	Lump, Egg, Nut, Stoker	11·5 — 14·9	13·1	13,153	7
District C					12,846	
Tofield Area Various Operations		Mine Run, Lump, Egg, Stoker	7·2 — 14·3	10·3	12,844	72

BRITISH COLUMBIA

South District						
Ashcroft Field Hat Creek Coal Mine	Hat Creek	Mine Run	5·2 — 46·7	23·3	12,579	27
Princeton Field Various Operations		Mine Run, Lump	5·0 — 20·8	10·6	13,436	26
Merritt Field Middlesboro Collieries Ltd.	No. 3 North, No. 2 South	Mine Run, Lump	6·8 — 25·2	13·9	14,550	14
Central District						
Telkwa Area Bulkley Valley Collieries Ltd.	Bulkley Valley	Lump	10·1 — 13·1	11·6	15,200	6
Telkoal Co., Ltd.	Aveling	Lump, Stoker	6·4 — 13·5	8·7	15,178	4
		Average			15,191	

Range of Ash—Dry Basis; Calorific Value—Dry Mineral Matter Free—*Concluded*

Name of Company	Mines	Size	Ash Per Cent		Cal. Value Dry-MM Free B.t.u./lb.	Number of Samples
			Min. Max.	Average		
Kathlyn Lake Area	Prospects	Mine Run		15·4	13,998	9
Groundhog Area						
Various Prospects		Mine Run	16·4 — 37·4	26·2	15,008	12
North East District						
Peace River Area						
Coking Coals	Prospects		2·1 — 6·1	4·1	15,711	16
Non-Coking Coals	Prospects		1·2 — 19·3	6·9	15,361	32
South East District						
East Kootenay Area						
Crow's Nest Pass Coal Co., Ltd.	Elk River	Mine Run	6·1 — 10·5	8·3	15,819	4
	Coal Creek	Slack	9·9 — 13·6	10·0	15,887	21
		Average			15,876	
Crow's Nest Pass Coal Co. Ltd.	Michel	Mine Run	3·6 — 13·6	7·5	15,598	28
		Lump	5·2 — 15·5	9·7	15,602	8
		Stoker	5·2 — 8·8	6·8	15,529	16
		Slack	4·2 — 14·0	8·7	15,698	62
		Average			15,642	
Vancouver Island District						
Comox Area						
Canadian Collieries (Dunsmuir) Ltd.	Comox	Mine Run, Lump, Nut, Stoker	8·0 — 19·7	12·8	15,353	64
		Slack	10·9 — 20·5	14·6	15,362	9
		Average			15,354	
Nanaimo Area						
Canadian Collieries (Dunsmuir) Ltd.	Wellington No. 10, etc.	Mine Run, Lump, Nut, Pea	8·5 — 21·8	13·5	14,961	67
		Slack, Washed Smalls	11·6 — 19·3	14·4	14,929	12
		Average			14,956	

Yukon						
Yukon Coal Co., Ltd.	Tantalus Butte	Mine Run	10·2 — 19·5	14·1	14,117	12
Northwest Territories						
Eldorado Mining and Refining Co., Ltd. (Great Bear Lake Area)	Prospects	Mine Run	8·5 — 34·7	15·9	11,144	21

NOTE.—All averages are weighted except those marked with an asterisk(*).

†—The bulk of the samples from Welton & Henderson (Black Diamond), are from the North Minto Area.

**—This calorific value will vary with the asphalt content of the briquettes.

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* Trade names of coals.

SER 622(21)

C212r

Canada Mines Branch.

Report No. 836

C. 2

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~~30 Campus Dr.~~
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