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THE PRINCETON COALFIELD, B.C.

E.R. HUGHES 1941

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THE PRINCETON COAL FIELD, BRITISH COLUMBIA

by E. R. HUGHES

Introduction.

Situated 182 miles east of Vancouver, on the Canadian Pacific Railway's Kettle Valley Branch, the Princeton coal field is readily accessible to the Coast markets. The area covers approximately 40 square miles and present indications are that the deposits should contain at least 300,000,000 tons of coal. Comparatively little development has yet taken place in this coal field that lies near Vancouver's back door. Since the commencement of recorded output the collieries operating in this area have produced 1,640,518 tons of coal.

The coal field proper includes only the Tertiary deposits adjacent to the town of Princeton and does not include the Coalmont or Nicola deposits. Production has never been on a large scale. The largest annual output from any property was the 81,780 long tons mined at the Granby Colliery in 1940. Coal output was first recorded in 1909 and since that time 15 properties are reported to have either mined coal or to have done prospecting or development work; of these only two are presently active. None of the presently inactive companies closed because their coal resources were exhausted.

General Geology

The Princeton field is of Oligocene age and is one of the series of more or less isolated Tertiary lake basins in which coal, or lignite, has been found in many parts of the interior of British Columbia. Resting on the Nicola group rocks of the Triassic age, the Princeton sedimentaries consist of sandstones, conglomerates, shales, bentonite, bentonitic clays and several seams of coal.

Tertiary volcanics occur both above and below the stratified rocks and in places the volcanics have thrust themselves through the overlying measures. In some areas the coal has been completely destroyed by vulcanism, while in other parts some of the moisture has been driven from the coal; thus improving the grade.

The field can best be described by dividing it into two areas; the Southern area lying to the south of the town of Princeton, where most of the mining has been done, and the Northern area lying to the north of Princeton, where very little development has taken place.

The Southern area: This area is in the form of a basin and extends in a southwesterly direction from the town of Princeton for a distance of almost eight miles. The southernmost rim outcrops in the vicinity of Lamont (or 9-Mile) creek. This part of the field attains a maximum width of 4½ miles. Numerous outcroppings occur in the north, south, west and central parts of the area and several drill holes have proved the existence of valuable coal seams.

A notable feature, common to such Tertiary deposits, is the comparatively rapid change of seam characteristics over a short distance. Thus, while the Princeton seam had a thickness of 18-feet at the old Princeton Colliery, the same seam thinned down to 10-feet at the Princeton Tulameen mine, and the continued thinning in a westerly direction resulted in a width of only 5-feet to 6-feet in the most westerly workings of the Tulameen No. 3 mine; the extent of this observed thinning takes place over a distance of approximately 2½ miles. Continuing around the rim of the basin in a southwesterly direction exposures of thicker seams have been found, and whether the Princeton seam widens out again, or whether these are other seams, has not yet been proven. Together with changes in seam thickness, wide variations also occur in the width, and number, of included clay partings. These varying qualities specifically apply to surface showings and to the comparatively shallow depths so far penetrated by the mine workings. The possibility of more uniform conditions existing at depth is still a matter of speculation. In at least two of the larger operations where appreciable cover has been gained there have been distinct signs of improvement both in the quality of the coal and in the diminishing width of the included clay partings.

The lack of continued uniformity has, so far, prevented any accurate correlating of the many coal showings in the area. A detailed geological survey may prove to be of value in establishing identification, and in creating a reliable system of enumeration. Because no satisfactory correlation has been made the seams are usually designated according to the name of the colliery operating on a coal lease.

The seams dip towards the centre of the basin and the angle of inclination generally increases near the outcrop where, in some instances, the measures are almost vertical. Most of the mining to date has been from seams dipping from twelve to thirty degrees from the horizontal. With the exception of one property, that passed through a distrubed area, very little faulting has been encountered in any of the mining operations.

The Northern area: This area extends in a north-easterly direction from the town of Princeton for a distance of approximately eight miles and attains a maximum width of four miles. The area is more irregular in shape than the southern part of the field and rests, in most parts on the older rocks of the Nicola group. The Tertiary volcanics are not entirely absent but their presence is less noticeable than in the Southern area. Coal outcrops have been observed on Summers creek, at the northern rim of the area, and on the property of the old United Empire Mining Company about two miles northeast from Princeton. The total recorded output of coal from this area is less than 3,000 tons. According to reports the coal was too dirty to be of commercial grade. A three feet seam of coal outcrops on China creek about 1,000-feet from the Princeton-Coalmont road. A prospect tunnel has been run along the strike of the seam but was abandoned, probably because the coal was considered to be of uncommercial grade. China creek cuts through several hundred feet of undisturbed sandstone and shale and although no other coal seams have been found this locality appears to favourably lend itself to further prospecting.

Most of the central part of the area is overlain with glacial drift of undetermined depth, although there is a good showing of sandstone exposed on the northern boundary of the Princeton airport. A diamond drilling programme would be required to fully ascertain the possibilities of this Northern area.

Classification

Although described in early reports as a lignite of the better class, it is now designated, by the Dominion Bureau of Mines, as being of subbituminous grade. During 1941 ten samples of coal were taken by the writer from two operating mines and analysed by the Chief Analyst and Assayer at the British Columbia Department of Mines Laboratory, Victoria, B.C. The B.T.U. rating of these samples ran from a high of 10,360 to a low of 7,400. The average analysis of five samples taken at one mine was:-

Moisture	13.26%
Volatile Combustible Matter	28.50%
Fixed Carbon	45.02%
Ash	13,22%
B.T.U's	9,118.

The average analysis of the five samples taken at the other mine was:-

Moisture	15.72%
Volatile Combustible Matter	28.76%
Fixed Carbon	42.64%
Ash	12.80%
B.T.U's	8,371.

Of samples recorded in the British Columbia Department of Mines Bulletin No. 14, as being taken in 1926, the coal from one mine averaged 10,540 B.T.U's, and that from another averaged 10,307 B.T.U's.

Of the seams so far worked, or prospected, none have been entirely free from in cluded bands of clay, shale, 'bone' or rock; many seams have three or more layers of extraneous material. In addition, a clay or shale capping of varying thickness often falls as the coal is mined and adversely affects the value of the product.

Apart from cleaning by the miners at the face, and hand sorting at the tipple, no attempt has been made to effectively separate the foreign matter from the clean coal. After being wett ed, and subsequently dried, this class of coal soon disintegrates; so that wet washing has not been considered feasible. However, if a serious attempt is to be made to satisfactorily prepare the coal to meet competition from other fuels, then some method of mechanical dry cleaning should be considered.

The coal does not store too well when exposed to the atmosphere and direct sunshine; as the coal dries out the lumps break up. Where possible the coal should be kept under cover. The incidence of

spontaneous combustion must be taken into account when large quantities of the coal have to be stored. Slack coal stored in mine yards has often gone on fire when kept in piles higher than five feet. There have been instances of spontaneous combustion taking place in colliery storage bins.

Although regarded chiefly as a domestic coal it has, during the past seven years, been successfully used at the Granby Company's 17,500 K.W. steam electric plant at Princeton. This plant supplies the power requirements for the Company's Copper Mountain mine and the Allenby concentrator. The Granby Company formerly operated their own coal mine in the Princeton field, but now purchase small sized coal from other local collieries. The coal is trucked from the mines and is pulverised at the plant.

Occurrence of Seams

In addition to numerous outcrops, several drill holes have proved the existence of workable seams. Early records indicate that the Vermillion Forks Mining and Development Company prospected for coal in Princeton as long ago as 1901 and did some development work on a surface outcropping. This company later drilled several holes at varying intervals near the edge of the Similkameen river from Princeton. One hole, which has been mentioned in past issues of Minister of Mines Annual Reports, and also referred to by Dr. Charles Camsell in a report of his examination of the Similkameen district in 1906, was drilled to a depth of 208 feet near the Similkameen river bridge at Princeton. The record of this drill hole is as follows:-

	Thickness Feet	Thickness Inches	Depth Feet	Depth Inches
Gravel	14			
Shale	21	6		
Coal	4	6		
Sandstone		5½	40	5½
Coal	6	7½		
Clay	1	10	48	11
Coal	18	5½		
Shale	3	1		
Carbonaceous shale	4	6		
Clay	0	5		
Carbonaceous shale	0	8		
Sandstone	1	7		
Fireclay	2	1		
Coal	0	2		

	Thickness Feet	Inches	Depth Feet	Inches
Shaly coal	1	1		
Shale	1	0	81	11½
Coal	1	8		
Clay	1	4		
Coal	1	6		
Shaly coal	1	2		
Coal	1	6		
Clay, shale, etc.	26	4½		
Sandstone	31			
Clay, shale, etc.	79	6	227	
Sandstone	44	6		
Clay, shale, etc.	8	6	280	

Aggregate of clean coal, 34 feet 5 inches.

The big seam encountered in this hole is generally referred to as the "Princeton" seam. The upper part of the seam was worked at the Princeton Colliery, which mined the area adjacent to the drill hole. The same seam, reduced in thickness, was also mined at the Princeton Tulameen mine, the Tulameen Colliery, and the Pleasant Valley Colliery. Most of the coal mined in the Princeton district has come from this seam. It is possible that this is one of the seams worked at the south and southwest parts of the field; although at present there is insufficient evidence of correlation to substantiate this theory.

Another hole, drilled by Sharp, nearer the western rim of the Southern area, was put down to a depth of 863 feet and passed through seventeen seams of coal having an aggregate thickness of 50½ feet, of which the thickest was nine feet.

At the Black mine, situated six miles southwest from Princeton, the measures slope easterly on a pitch of 50 degrees. Across the measures outcropping near the Main adit the writer measured 82'6" of stratification in which there is an aggregate thickness of 47 feet of coal; and in which four seams have been partly developed.

At the Jackson mine, of the British Lands Ltd., an adit level was driven into a hillside through 119 feet of surface gravel, sandstone, and shale, then passed through a 4½ foot seam of coal containing a 1½ in ch shale-band and a 7½ inch bentonite seam. The seam dipped easterly on a pitch of 50 degrees. Forty-seven feet further along the cross-measure level another seam was found. The second seam is 86 inches

thick, including a 1 inch clay parting, a 1 inch shale parting, a 2 inch shale parting, and a 14 inch mixture of shale and coal.

On the north half of Lot 88, a half-mile north of the Jackson mine, the Taylor Burson Coal Co. Ltd. are developing a seam believed to be the larger of the two found at the Jackson mine.

At the Granby Colliery, six miles from Princeton, and ¾ mile south-east of the Black mine, two seams of coal were worked. The average thickness of No. 1 seam is approximately 16 feet, in which occurs no less than eighteen bands of "bone", bentonite, clay, and ironstone. This excess of foreign matter caused mining to be confined to the lower 5' to 7' of the seam. The No. 2 seam is 460 feet above the No. 1 seam and is 5' to 7' in thickness, including bands of clay and shale.

An eight foot seam of coal outcrops on Lot 292, about 4 miles south-west of Princeton and near the Similkameen river. Included in the seam are nine bands of clay, shale, and "bone",,having an aggregate thickness of 15 inches. These bands are so interspersed through the seam that the thickest layer of clean coal was not more than twelve inches.

The seam that was worked at the Blue Flame mine, 9 miles south of Princeton, was described in the 1929 Minister of Mines' Report as follows:- "The seam is about 24 feet in thickness and lies at an angle of 15 degrees; the lower section of the seam is intersected by several small bands of shale and bone, and as a result the operations are confined to the upper section, which is 8 to 9 feet in thickness".

On the south side of the Similkameen river, about three miles from Princeton a 5' 7" dirty seam of coal outcrops on coal-land owned by the Great Northern Railway. A small seam of coal was also reported to have been found when foundations were being dug for the Allenby concentrator.

Except for the distances given between the two seams at the Granby colliery, and the two seams at the Jackson mine, no attempt has here been made to establish horizons for the seams already described because the information presently available is insufficient to postulate any complete order of succession. However, it naturally follows that the seams outcropping nearer the centre of the basin must, if there is no major faulting, be placed higher in the series than those outcropping

nearer the rim.

The seams that can be identified in the series are four not yet mentioned, and which outcrop near the banks of the Similkameen river close to the town of Princeton. These are the Upper Princeton seam, located 480 feet above the Main Princeton seam; the Gem seam, probably about 500 feet above the Upper Princeton seam; a 2 foot seam lying approximately midway between the Upper Princeton and the Gem - this seam is overlain with gravel at the outcrop so its true thickness may be greater than is indicated at the surface; and the remnant of a badly weathered seam about 100 feet above the Gem.

The Upper Princeton seam was worked for a period of five years at the Pleasant Valley No. 1 mine. The Inspector of Mines comments on this seam is given in the 1930 Minister of Mines' Report, and is as follows:- "This is a fairly thick seam of coal and the lower section is intersected with several bands of shale, fireclay, and bone, with the result that the operations are confined to the upper section, which averages from 3 to 4½ feet in thickness of good clean domestic coal overlaid by a fairly good shale roof". The seam had a pitch of from 12 to 16 degrees.

The Gem seam is approximately 42 inches thick and has a pitch to the west of 15 degrees. This seam has been partly developed at two operations.

The Princeton Tulameen mine worked the Main Princeton seam. When the mine closed in 1944 the writer measured the seam section at the face of the Main slope, this showed 9'6½", including five thin clay partings, three of which were ¼ inch in thickness and two were ½ inch bands; or less than two inches of impurities in 114½ inches of coal. This face was representative of the workings at this depth and is the best seam section seen by the writer in the Princeton coal field. The place where the measurement was taken was 1,685 feet down the Main slope from the portal and under a cover of 640 feet. The seam showed a gradual improvement as depth was gained.

At the presently operating Tulameen Collieries Ltd's Pleasant Valley No. 4 mine the writer recently measured a representative section near the face of the Main slope and found it to show 5'3" of coal, with

four thin clay partings aggregating 2 inches in thickness.

A small seam occurs about 120 feet below the Main Princeton seam and the Pleasant Valley Mining Company did some prospecting where the seam outcrops on their property. The seam was found to be disrupted at this point and prospect work was discontinued. This showing was known as the Pleasant Valley No. 3 seam.

In the Northern area of the coal field intermittent development has taken place at the United Empire, later the Red Triangle mine, situated two miles north-east from Princeton. A description of this operation is given in the 1913 Minister of Mines' Report, from which the following excerpts are taken:- "The pitch of the seams is 45 degrees, east to west". "The following is a section of the coal-seams, which are classed as 'lignitic coal':-

48" coal.)
6" clay.) Top seam.
54" coal.)
21 ft. sandstone and clay.
60" coal and slate.
48" clay.
16 ft. sandstone.
48" coal. Lower seam.
7 ft. coal and clay.
11 ft. sandstone."

Although three companies did some work on the above property, the total amount of coal produced, as given in official returns, is 2,492 tons.

The thin seam outcropping on China creek, 1,000 feet north of the Princeton-Coalmont road, appears to underlie the Main Princeton seam and may be identified as the Pleasant Valley No. 3 seam.

A 6-foot seam outcrops near the north end of the Tulameen river bridge at Princeton, where some exploratory work was done by the Ashington Coal Company during 1929 and 1930. Because of the many intersections of shale and bone the seam was considered to be of little commercial value. An adit-tunnel was driven into the hillside cutting across the measures for 700 feet for the purpose of examining the lower measures in this area. A diamond-drill hole was put down 300 feet at the face of the tunnel, after which work was suspended. Total coal production from this property was only 22 tons.

The foregoing account of large and small seams include all the known occurrences of any importance so far found.

Production

The first officially recorded output came from the Princeton Colliery in 1909; the Vermillion Forks Mining and Development Co. Ltd. began producing during December of that year and declared an output of 150 tons. The colliery was then operated by the Princeton Coal and Land Co. Ltd., and their production for 1910 was 11,868 tons. Since that time, until the end of 1945, the coal field has produced a total of 1,640,518 tons. Some properties have changed hands several times and for this reason the following list of coal production from individual operations refers to the name by which the property is best known:-

	Long tons
Granby Colliery	454,819.
Tulameen Colliery	442,341.
Princeton Colliery	351,702.
Princeton Tulameen Mine	172,420.
Blue Flame Colliery	131,012.
Pleasant Valley Colliery	80,741.
Black Coal Mine	3,731.
United Empire, or Red Triangle	2,492.
Jem Domestic Mine	538.
Jackson Coal Mine	374.
Yale Colliery	326.
Ashington Mine	22.
Total	1,640,518.

The Producing Mines

Only two mines are presently operating and both these properties are still in the development stage; they are the Tulameen Collieries Ltd's Pleasant Valley No. 4 mine, and the Taylor Burson Coal Co. Ltd's No. 1 mine.

The Tulameen Colliery Company's No. 3 mine closed down during June of this year when all available pillars above water level had been extracted. With a view to continuing production the Company took over the abandoned Pleasant Valley property, across the Tulameen river from their No. 3 mine, and during August, 1945, commenced to drive a cross-measure rock slope dipping 25 degrees into the hill-side, from the south end of the old Pleasant Valley colliery tipple. The Main Princeton seam has now been tapped in both the Main and Counter slopes; levels and the necessary connecting airways are now being driven. The seam dips to the south-east on a pitch of fourteen degrees. To the west of the new workings is the abandoned Pleasant Valley No. 2 mine, now filled with water.

480 feet above, in the Upper seam, are the workings of the abandoned Pleasant Valley No. 1 mine. To the south and east lies an unworked area that, barring undue disturbances, appears capable of being developed into a major operation.

The Taylor Burson No. 1 mine is a small operation developing a steeply inclined seam at a point about 800 feet above, and one mile from, the Tulameen river valley. A slope is being driven northeasterly and as it becomes sufficiently advanced it is intended to drive levels out to the surface. The height of the workings above the valley floor, and the presence of a series of natural benches between the mine and the valley are features that could be advantageously utilized to afford drainage and ventilation outlets, as well as service and haulage levels when the workings are deepened. The mine is operating under a licence issued under the provisions of the "Coal Act".

Mining Problems

The Princeton coal field like many others has had its share of grief and it is to be hoped that new operators will at least make some study of past errors with a view to avoiding the many pitfalls that await the unwary.

With the exception of a shallow shaft sunk at the Princeton Colliery, all mining has been from slopes or adit-levels. During the early stages of development before any appreciable cover has been gained, and before the deleterious effects of swelling bentonite has made itself known, the new mine gives the appearance of being almost all that could be desired.

Meeting such apparently favourable conditions a new operator is apt to disbelieve the precautions given to him before he started. The voice of experience would seem to have erred in his particular case. It seems to be a great waste leaving such big pillars anyhow. So with the sudden rush of coal orders in the Fall just a few "unimportant" pillars are split and some of the inside pillars are made a little smaller. Well, there just weren't enough places ready to meet such an awful demand for coal all at once; and the mine is certainly standing up well - no "squeeze" at all - yet.

In time, maybe this year, maybe not till next year, a few stringers break and have to be relined, or centre-posted. There was quite a trickle of water from the roof breaks too. A few more stringers break and need relining. Pretty soon the floor is heaving and has to be brushed. It seems funny all this "squeezing" and not very much cover on the mine yet.

Fall comes around again and more unexpected rush orders arrive, in fac t there aren't enough men, or lamps and equipment, to both get out coal and keep up with repairs. No. 1 and No. 2 levels are in pretty bad shape now and no sooner are they rebrushed and retimbered than the same thing is needed again. These levels will have to be stopped for a while so that the miners now on repairs can get busy producing the sorely needed coal. The two levels can be fixed up later.

The tracklayer went into No. 1 level to pull up a length of track and noticed a lot of smoke coming up the crosscut from No. 2 level and he hurriedly reported to the nearest official.

I will not burden you with the involved details of (to use the words of a well known statesman) the "blood, sweat and tears" that were necessarily expended in hurriedly carrying material through the low airways, and over the caves, so that temporary stoppings could be built; nor about the man that went crazy at the seal - it took two men to hold him down. But the company's secretary has a good idea what it all cost in dollars and cents. And those orders were filled by another mine.

The foregoing analogous account of mine "development" may shock many of the more experienced certificated coal mine officials, but it is not intended as a rebuff to the excellent mining men who have, and still are, engaged in toiling under difficulties in this field where spontaneous combustion and "squeeze" are among the more outstanding underground problems. Although the story may not be entirely applicable to any operation, nor completely true of any individual colliery, nevertheless it is illustrative of the conditions encountered, and the methods that have often been followed in the Princeton coal field.

Underground fires have occurred at five of the six larger collieries during the active life of the operations, and at the sixth

shortly after the mine closed. There have been individual mines among the collieries mentioned that have been entirely free from fire; the most notable probably being the recently closed Tulemeen No. 3 mine where all available pillars above water level were successfully withdrawn without any signs of heating.

Bentonite is freely dispersed above and below most of the coal seams in the district. One seam of bentonite about a mile from Princeton measures 11 feet in width. According to Mr. Hugh Spence, Mines Branch, Ottawa, who examined the clay deposits in 1924, the origin of bentonite has been defined as a transported, stratified clay formed by the alteration of volcanic ash shortly after its deposition, probably in shallow bodies of water. An illustration in Mr. Spence's report shows a small cube of dry bentonite beside the same cube 13.8 times larger after having absorbed all the water it would hold.

Bentonite is used in industry as an absorbent, and this quality that makes it so useful in other fields of endeavour also makes its presence extremely undesirable in the mining of coal, particularly in the presence of water. Workings lying near the surface are not much affected by the action of bentonite as some of the expansion has undoubtedly already taken place. But as the workings proceed to depth and as water gradually percolates through the broken measures, plus the dead weight of the comparatively soft superincumbent measures, the expansive qualities of the bentonites are soon made manifest; causing the floor to heave and the roof to sag, to the extent that in a short time the roof and floor meet.

Most mines have been fairly free from methane but there are indications that greater amounts will be given off at increased depths. Percentages of the gas visible on the testing flame of a safety lamp have been found by the writer five times during the last five years; these visible gas caps were found at two mines only and in each instance the ventilation in the affected places was below normal. The last samples of return air taken at the various mines gave the following analyses:-

Mine	Place	Methane
Granby N o. 1;	North return:	0.04%
Granby No. 1;	South return:	0.04%
Princeton Tulameen;	Below #12 level:	0.56%
Princeton Tulameen;	Main return:	0.42%
Tulameen No. 3;	Main return:	0.02%
Jackson No. 1;	Main return:	0.02%

Methane was more frequently in evidence at the old Princeton Colliery. In the early days, when open lights were permissible, there were at least three instances of men being burned by gas ignitions. This operation closed over twenty years ago.

Because of the relatively rapid absorption of oxygen by the coals of this district an extinctive atmosphere, or "blackdamp", is not infrequently encountered in poorly ventilated workings.

Methods of Work

All mining to date has been done on the room-and-pillar system; with post-type punching machines used exclusively for the mechanical cutting of coal, which is then hand loaded. Conveyors have been used at only one operation; when coal was conveyed down from raise faces to mine cars on the level below. No method of mechanical loading has yet been introduced.

The ease with which this coal takes fire should, above all other reasons, call for the development of a mine into distinctly isolated panels having a minimum number of openings so that when the coal inside the panel has been exhausted the whole area can be quickly and effectively sealed. But, unfortunately, far too little attention has been given to this very important aspect of mining economics.

If coal in the Princeton field is to be profitably mined at depth it will be necessary to give some thought to advance planning, and eliminate the too frequent error of developing, breaking up, and weakening large connecting and contiguous areas. And, if the ground necessary for a year's output was developed and exhausted within that year, maintenance costs could be kept much lower than has hitherto been obtained in this district.

Although greater in those mines going to the dip of the valley floor the amount of water to be pumped is not usually excessive. During summer months the domestic market for this coal is normally at a very low ebb; but, because of the deleterious effects of water-logged bentonite, as already described, it is not practicable to allow the slopes to fill with water. Whether there is any production or not, it is imperative that a working force be kept employed to keep the mine dewatered and do

necessary maintenance work. The expense of this maintenance sometimes is of such proportions that any profit an operator might have made during the previous production season may be entirely dissipated in preserving the property for the next winter's work. In more advanced cases of neglected maintenance it is often less expensive to drive new outlets than to attempt the rehabilitation of inundated workings in saturated bentonite. Shallow dry workings operated from adit levels situated above the valley floor are much less troublesome to maintain.

The creation of a summer market, such as supplying the fuel needs of a good sized steam electric power plant, would be highly beneficial to any coal mining endeavour in this area.

Some of the now abandoned mines are so situated along the outcrop as to preclude further entry to the deeper areas from slope approaches driven in coal. In these cases it would be more advantageous to sink shafts or drive cross-measure slopes to reach the coal left to the dip of former workings. Despite past mining efforts and the amount of coal so far produced the coal reserves of the district are still almost intact. The coal already mined comprises less than one percent of the probable reserves.

Conclusion

Excepting the Vancouver Island mines, the Princeton coal area is nearer to Vancouver than is any other producing field. Last year 868,396 short tons of Alberta coal was brought into British Columbia. There is no doubt that the Princeton field could produce at least 300,000 tons of coal per year. Last year's output was only 51,943 tons, whereas the greatest recorded annual production was the 1942 total of 112,041 long tons.

Although the present output from the mines is very small the coal reserves of this area constitute a valuable part of the natural resources of the Province, and as such warrant a more searching examination into the possibilities of the deposits both as a source of domestic fuel and as a means of developing electric power.