

NEW COAL AREAS ON THE C. P. R.

At Bienfait, about ten miles east of Estevan, on the Souris branch of the Canadian Pacific Railway, mines are being opened which will be capable of turning out, when fully developed, 1,000 tons of lignite coal per day. As at this point the coal lies within 70 feet of the surface and quite flat, and with a dip of about 1 degree to the south, an incline or slope is being used in place of a shaft. The thickness of the seam at this point is 15 feet, but only the bottom 7 feet will be mined. This class of fuel, which is somewhat better than that found in Dakota, is used almost entirely by the farmers throughout the wheat districts of the North-West Territories and Manitoba. It is also used by the largest milling companies, being cheaper than either the high-priced coal from the East or the coals from Alberta and British Columbia.

Two seams of semi-anthracite coal are also being developed at a point six miles east of Banff, Alberta. The two seams average, respectively, seven and eight feet, dipping 45 degrees to the west. The seams have been explored for a distance of seven or eight miles north, and the measures as a whole comprise some six workable seams in a distance of 2,000 feet at right angles to the dip. Some of the upper seams are semi-bituminous. The two lower semi-anthracite seams, on which all of the present development work is now being performed, are found in the hard, cretaceous sand stone. The upper measures are in softer shales and sand stones, which is supposed to be the explanation for the upper seams being semi-bituminous instead of semi-anthracite. A gravel entry 22 ft. by 9 ft., consisting of three compartments, is now being run a distance of 1,600 ft. to connect with the present underground workings. At a distance of one and one-half to two miles from the mouth of the entry, there will be a total height of about 2,000 feet of coal. It is, therefore, not intended to sink for some years. As the practice throughout Western Canada has been to use wood, lignite or bituminous coal for both domestic and steam purposes, it will require some time to develop a very large market in the West, but it is expected that within two or three years the product will supply the domestic trade from Winnipeg to Vancouver. It is also quite possible that this fuel will be marketed to advantage in the Pacific Coast cities, where a large market will be available.

The analysis of the clean coal is about as follows:

Fixed carbon	84 per cent.
Volatile matter	9 " "
Moisture	1 " "
Ash	6 " "
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	100 " "

The clean semi-bituminous coal analyzes about as follows:

Fixed carbon	78 per cent.
Volatile matter	14 " "
Moisture	1 " "
Ash	7 " "
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	100 " "

The semi-anthracite coal burns more freely than the Pennsylvania product, and is a little more brittle. The semi-bituminous is excellent steam coal. The ash in regular shipments will probably run 12 to 14 per cent. At present, the coal is being hand picked, but it is expected to install some of the latest mechanical picking devices as soon as experiments with the various forms of mechanical pickers have been completed.

The standard Pennsylvania sizes of anthracite are now being produced as follows:

Lump, passes over	3 1/4" round holes
Egg, passes over	2 1/4" " "
Stove, passes over	1 1/2" " "
Nut, passes over,	7/8" " "
Pea, passes over	9/16" " "
No. 1, buckwheat, passes over	5/16" " "
No. 2 buckwheat passes over	3/16" " "

The plant will be equipped with four 150-h.p. Robb Engineering Company's boilers, a 15 drill air compressor, and also a high pressure compressor for compressed air haulage. Thirty or forty miners' cottages are being built this summer, and a large number will be completed next summer. Several boarding houses are also under way. A complete fire, water and

drainage system will soon be installed. All these mines are owned and operated by the Canadian Pacific Railway.



COMPARATIVE COST OF WOOD AND STEEL FRAME FACTORY BUILDINGS.

H. G. Tyrrell, chief engineer of the Brackett Bridge Co., Cincinnati, sends us the following comparison of the cost of wood and steel in factory buildings. There are differences in the cost of material in Canada and the United States, but the comparison will, nevertheless, be instructive to our readers:

The following estimates give the comparative costs of a factory building, framed in slow burning wood construction, and steel fireproof construction. The building is 60 by 100 ft., and six stories high, containing six floors and roof. The floors are designed to carry an imposed load of 100 pounds per square foot. The building has windows in all four sides and the walls in both cases carry the ends of the floor beams. The thickness of walls in the basement is 24 inches, while in the first four stories it is 17 inches. In the remaining two stories the wall is 13 inches thick. The estimates given below, are for the structural part of the building only, including walls, columns, floors, roof, excavation, doors and windows, foundations, but do not include any partitions, stairs, elevator, plumbing, heating, lighting or wiring.

The framing of the slow burning design is as follows: Eight tiers of columns, spaced 20 feet apart in both directions, carry the floors and roof. From the roof down through four stories, the columns are of yellow pine. In the lowest of these stories the size of column used is 14 by 14. Below this, where a greater size would be required than can be secured economically, round cast iron columns have been used, 11 by 1 1/4 in the first story, and 12 by 1 1/2 in the basement. All the columns have cast iron bases, three feet square and 16 inches high. Lengthwise through the building in the floors, run two lines of 12 by 20-inch yellow pine, which rest on the brackets of cast iron column caps. The cross floor beams are 8 by 16 yellow pine spaced 5 feet apart. At the columns they rest on column caps, and at intermediate points they hang from the 12 by 20 header beams by means of wrought iron stirrups. In the walls the cross floor beams rest on cast iron wall plates, 9 by 20 by 3/4. The floor is made of 7/8-inch matched maple, laid on 1 3/4 yellow pine. The roof is similar in construction and has a tar and gravel covering. The quantities of material in the building, as outlined above, are as follows: Excavation, 1,800 yards; cellar, cement floor, 6,000 sq. ft.; foundation, concrete, 150 cub. yards; brick, 39,000 cub. ft.; 238 windows, 4 by 7 ft.; roofing, 6,000 sq. ft.; yellow pine timber, 116,000 ft. B.M.; yellow pine flooring, 73,000 ft. B.M.; 7/8-in. matched flooring, 46,000 ft. B.M.; iron work, 46 tons. The estimated cost of this design is \$35,000, which is equivalent to 6.1 cents per cub. foot of the building, or 83 cents per square foot of the entire area of all the floors. The interior framing of floors and columns, including wall plates, columns, caps and bases and stirrup irons, is 27 cents per square foot of floor area.

In the fireproof design, the arrangement of beams and columns is similar to that for the slow burning design. Riveted steel columns are used from cellar to roof, and the floors are framed with steel beams. The flooring between the beams is reinforced concrete. In this case the quantities are as follows: Excavation, 1,800 cub. yards; cellar floor, 6,000 sq. ft.; foundation, concrete, 150 cub. yards; brick, 39,000 cub. ft.; 238 windows, 4 by 7 ft.; roofing, 6,000 sq. ft.; steel columns, 105 tons; steel beams and wall plates, 252 tons; concrete, floor and roof, 42,000 sq. ft. The cost of the building in this case is \$57,000, which corresponds to 10.2 cents per cubic foot of building, or \$1.36 per square foot of the total floor area. Floors and columns cost 75 cents per square foot of floor area. Hence the comparative estimates are as follows:

	Cost per Cub. Ft. of Building.	Cost per Sq. Ft. Floor Area	Cost of Floors and Cols., Sq. Ft.	Total Cost.
Slow burning construction	6.2c.	83c.	27c.	\$35,000
Fireproof steel construction	10.2c.	136c.	75c.	\$57,000