

themselves overlain by glacial debris. In a total thickness of not more than 300 feet of measures, four at least, good, workable seams have been uncovered; the intervening beds consisting of clay shales, often highly nodular, with much ironstone, a few beds of soft, crumbly sandstone towards the bottom, and finally a basal bed of coarse loosely-cemented conglomerate, composed chiefly of pebbles from the underlying volcanics.

These rocks must have originally covered a much more extensive area than at present, but their soft nature and consequent inability to resist erosion have resulted in detached remnants only remaining in the valleys. As the valleys are wide, and almost invariably heavily drift-covered, the coal is exposed only where the streams have, in a few places, cut through the deep mantle of gravel to the bed rock; elsewhere no natural exposures are to be found until the higher ridges are reached, consisting of volcanics, the actual contact being everywhere masked. The strata, in addition to this, are much flexed and very subject to faulting, so that it will be readily seen that the task of delimiting the areas and prospecting generally is one of extreme difficulty.

The very small thickness of rocks overlying the coal, and the fact that they are folded in a series of short, rather sharp flexures, and subsequently have been subject to denudation, has resulted at times in the formation of a number of small basins where the seams at no time gain any great depth. It might be possible in such cases to work the coal in a series of open cuts or by stripping the overlying gravel and shales in favorable localities.

Small faults are numerous, and the seams are likewise cut by a number of dikes, usually accompanied by faulting, from the nearby granitic areas.

In regard to the size of the individual seams, the following section was measured at the Cassiar Coal Company's property, on Goat Creek; this is the most complete section to be found anywhere in the district:—

	Feet.
Clay Shales	
Coal with a few small clay partings.....	12.0
Clean coal	7.7
Top Seam	
Clay	2.0
Gray sandy shale and covered, about....	30.0
Coal	1.5
Clay shale	2.7
Coal with a few irregular clay partings...	14.5
Middle Seam.....Shale with ironstone nodules	3.3
Coal	2.0
Gray clay shale with nodular ironstone bands, about	50.0
Carbonaceous shale and coal	2.0
Bottom Seam.....Coal	1.5
Shale	0.5
Coal with small irregular clay partings....	9.0
Clay shale	

Several small seams overlie these. A short distance up the creek beyond these exposures the two upper large seams have been burned, leaving thin beds of slaggy material; the overlying clay shales are burned to a brick red, forming a very noticeable feature in the landscape where exposed in a high cut bank. The burnt area, however, does not appear to be of any great extent.

In the Transcontinental Syndicate's openings, a few miles higher up Goat Creek, five seams, 4 feet, 3 feet 3 inches, 4 feet, 6 feet, and 4 feet respectively in thickness were cut in about 130 feet of measures; while on the property of the Telkwa Mining, Milling & Development Company, on the head of the Morice River, at least four seams of the following thicknesses, 4 feet 2 inches, 4½ feet, 4 feet, and 7 feet 3 inches, have been stripped.

Practically all the coal land in this vicinity is controlled by four companies, the three above mentioned and the Kitamat Development Company.

On the Bulkley River, from a short distance above Moricetown to Sharp Creek (about 12 miles), coal outcrops at intervals, but

no workable seams have as yet been uncovered. At Sharp Creek nine small seams were stripped, varying from 15 to 40 inches thick, but they all proved too high in ash to be of value (an analysis of one of these is given above).

Near the head of the Skeena, about 150 miles north of Hazelton, another important coal field is situated, which has been prospected in some detail by the Western Development Company, who control about sixteen square miles of coal lands here. In this field the coal measures occur near the top of a great thickness of sedimentary rocks, which probably represent the porphyrites to the south. The rocks here are not so highly disturbed, and there is apparently a greater thickness of overlying strata than at the Telkwa areas. The coal-bearing rocks occupy the trough of a syncline, with gentle dips on either side, the Skeena cutting diagonally across it. At the southern edge of the basin, however, the strata are much more disturbed, being often tilted at high angles. At least one seam of good coal, from 5½ to 6 feet thick, has been opened up at several places, an analysis of which has already been quoted; other smaller seams are known to exist, and it is quite possible that the larger one does not represent all the workable coal in this area. The physical qualities of this coal are all that could be desired. It is extremely hard, resists weathering well, and is bright and lustrous in appearance. Although no recent volcanic rocks are known of in this neighborhood, still evidences of volcanic action are not wanting, as the rocks of the coal measures and the coal itself are found in places to be cut by small quartz veins, sometimes more or less mineralized with iron pyrites.

In most of the other coal districts mentioned no workable seams have as yet been found, the coal being either too thin or too highly disturbed to be economically worked. Taking into consideration, however, the difficulties of prospecting already alluded to, there is no reason to suppose that larger and more favorably situated seams do not exist, at least in some of the localities in question.

Although placer miners were the first to prospect the Skeena country, the results so far have not been encouraging, Lorne Creek being to-day about the only producing locality. This creek has afforded annually a small output of gold since about 1884.

The Omineca country, to the east, and reached via the Skeena and Hazelton, has long been a producer of placer gold. The old diggings are now nearly all abandoned to Chinamen, but there is said to be a large amount of ground there which can be profitably hydraulicked when transportation facilities have been improved and the cost of working lessened correspondingly. The presence of argentiferous galena in that district has also been known for some years, as well as that somewhat rare mineral, arquerite, a native amalgam of silver, which has been found in the creek gravels.

In the neighborhood of Kitsalas Canon, a number of quartz claims holding gold and copper have been located, but the writer is ignorant as to the conditions prevailing there.

In conclusion, it may be said that lack of transportation facilities has prevented the exploitation of a country rich in possibilities, and until the advent of the railway nothing can be done to open up and develop its latest resources. The present means of communication are highly unsatisfactory, Hazelton, the distributing point, being reached either by pack trail, 400 miles from Quesnel on the Cariboo road, or by river steamer from Port Essington, and as the Skeena is navigable only at certain stages, and then only with difficulty, this route cannot always be depended on. Away from the river, trails are few and bad, and much trail and bridge building will have to be done before even the best known camps are made easily accessible.

The pyroxene group of minerals, found in metamorphic and igneous rocks, are silicates of magnesia with variable proportions of iron, lime and alumina. In this group are angite, enstatite, diaspide and hypersthene.