

APPENDIX No. 1

Cretaceous, separated by shales of marine origin. The lowest is practically the base of the formation, and is considered Cretaceous from its fossil flora; though it lies just above the Fernie shale, now understood to be of Jurassic age. The line of demarcation is not very sharp, as the shales in their upper part become interstratified with sands, and gradually pass into a sandstone formation containing coal seams—called by Dawson the Kootanie. The age of the Kootanie, if not Jurassic, must be early Cretaceous. Above this the Dakota does not appear to be coal-bearing in an economic sense, and not until near the top of the Belly river or Judith river formation is reached does there appear to have been land conditions of sufficient long duration for the growth of material to form coal beds. The coal horizon in the Belly river contains but a few workable seams; but its areal distribution makes it important. The third coal horizon is at the top of the Cretaceous, and includes part of the old Laramie formation. The upper part in Alberta is a fresh-water deposit, and is classed as Tertiary, under the name of Paskapoo formation, and is not distinctly coal-bearing. What is believed to be the same horizon as the lower Laramie, bears many lignite seams, and in Alberta is given the name Edmonton formation, the highest member of the Cretaceous.

The three coal horizons are as below:—

- (1) Edmonton formation in Alberta, and Laramie in Saskatchewan.
- (2) Belly River (Judith River) formation.
- (3) Kootanie formation.

ESTIMATES OF AREA AND COAL CONTENT.

The problem of forming an estimate of the coal content is exceedingly difficult, and the aim in this review is to give what might be called the maximum value from the knowledge we at present possess. The minimum will be arrived at only after years of prospecting, and will, we hope, be well up to the present estimate.

In the small rich areas in the mountains the measures are best exposed, so that from these a better estimate of coal content can be made—a much closer one than in the case of flat lying measures, having exposures of coal seams at great distances apart, with few drill holes to prove the intervening portions. On the plains, so little is the evidence of disturbance of the beds that a large area in the vicinity of a heavy seam may reasonably be classed as workable. If, however, the area depends for coal on one seam alone, there is a constant danger that it may taper off in thickness or split up into workable seams by an increase in the partings.

A low estimate of the general content is, therefore, to be placed on the areas outside the mountains, and even this in the end may prove excessive.

For limited areas where heavy seams are known—as in the country south and west of Edmonton—the estimate is probably low enough, but in the less explored areas the estimate may be too high.

The Saskatchewan areas of the southern part may produce sufficient coal to warrant the estimate put on them; but the content of the portion northeast of Medicine Hat is problematical since few seams have as yet been found.

COALS OF THE FORMATIONS.

Alberta.—The Kootanie coals in Alberta are generally exposed in narrow bands in the mountains. These are here enumerated in order from the south:—

Coleman area is estimated at 45 square miles, with 50 feet of coal in the section, giving an estimated content of 2,000,000,000 tons.

Blairmore-Frank area is irregular in shape, and broken by faults and folds; but assuming for it an area of 50 square miles, with an estimated thickness of 30 feet of coal, its total content is estimated at 1,500,000,000 tons.

Livingstone area lies north of Blairmore, and west of the Livingstone range of mountains. The area containing coal approximates 60 square miles. A maximum estimate of its coal content is 1,500,000,000 tons.