

APPENDIX No. 1

Scotland to study the shale oil industry. While the French and German oil industries have survived, with a certain degree of protection, the Scottish oil producers have met all opposition from America and Russia without government assistance in the form of protection, or a bonus, and have developed a good dividend-paying business.

The extent of the New Brunswick shale is estimated at over 270 million tons (bull. Imp. Inst. 1904, pg. 115), and some of the bands are 20 feet thick.

According to the results obtained on a large sample of the Albert shale at the Pumpherston Forks, Scotland, the quantity of crude oil per long ton is about 40-50 gallons and the ammonium sulphate over 77 pounds. Equally good, if not better, results were obtained by Prof. Baskerville, of New York. These results were obtained from the shale alone. It is, however, to be hoped, and highly probable that in the mining of the shale, pockets and veins of the very valuable albertite will be encountered; this expectancy is based upon the widespread nature of this mineral in the surrounding territory associated with the shale. Should this occur, then a very much higher yield of oil would result. As will be observed by comparison, the yield of crude oil and ammonium sulphate from Albert shale compares very favourably with that obtained from the Scottish and French shale.

	Crude Oil.	Ammonium Sulphate.
"Fell" Shale (Best in Scotland).....	36-45 galls.	25-35 lbs.
Albert Shale (New Brunswick).....	40-45 "	77-00 "
French Shale (Boghead Coal).....	50 "	Not given.

According to the investigations of the Canadian geologists the Albert shale is a bituminous shale, and the oil of organic origin, there being very little plant remains found associated with it. This would then bring it into the category of the true petroleum. The recognized theory regarding the formation of petroleum is that it was formed from animal residue by the heat and pressure to which the material was subjected. While it has been impossible to obtain any data of research that it is a bituminous shale, it must be assumed that the Canadian scientists did not classify it as such without having some proof of its bituminous nature. The Scottish shales are not bituminous, in fact, they are free of this substance, and the carbon present is not the same as that in coal. In a like manner, the so-called brown coals of Saxony are not true coals, nor are they the same as the shales or Torbanehill mineral. The brown coals are of vegetable origin, yielding quite different products from the true soft coals.

That the carbon present in the shales and brown coal is different from the ordinary coal is exhibited by their respective destructive distillations, as already pointed out, the tarry products of the former belong largely to the paraffin series, while the latter belong to the aromatic series. Now, it is recognized in all technical chemical processes that special treatment is required for each peculiar mineral, and while the New Brunswick shale gives highly satisfactory results with the Scottish method of distillation, still it may be possible by investigation to obtain a method giving even a better yield. An examination of the analysis of the shale shows, on comparison with the Scottish shale, that a large yield of volatile products is to be expected.

	Broxburn, Scotland.	Albert, Grey.	Albert, Black.
Thus: Volatile Matter.....	25.05%	48.27%	42.05%
Fixed carbon.....	4.95%	2.16%	4.02%
Ash.....	60.55%	47.45%	52.50%
Nitrogen.....	0.54%	Not estimated	Not estimated