often met with in these Devonian rocks, and also in that member of the lower Silurian series in Canada which bears the name of the UTICA SLATES, and which is used at Collingwood for the distillation of "Shale Oil." The idea that the petroleum or rock oil of South Western New York, North Western Pennsylvania or Canada is necessarily associated with the coal bearing rocks, is altogether erroneous; and an attempt to search for coal from the supposed indications offered by "coal oil," or petroleum, would be wholly fruitless as regards coal itself, in many places where the oil is most abundant. Even if the Catskill Red Sandstone should be altogether wanting, there are conglomerates and carboniferous limestones lying above the Catskill Sandstone, before the coal measures begin, and these have a united thickness in the States of 5,600 feet, and are found in Michigan, together with the PORTAGE and CHEMUNG GROUP, underlying the coal field of that State.

The PORTAGE and CHEMUNG GROUP occupy nearly the whole of the south shore of Lake Erie, and extend far inland into the States of Pennsylvania, New York and Michigan. Many rock oil springs are found on or near the edges of the great Pennsylvanian coal field, where it overlaps the Portage and Chemung groups below it. There is no reason to doubt that they will ultimately be touched by the borer in many parts of the vast area of *western* country occupied by the Portage and Chemung group; but it must be borne in mind, that an inspection of a geological map is not a sure guide to the prospecter for coal oil. Rocks of the same geological age vary immensely in their mineral characteristics, and it is a remarkable case in point, that the same group of rocks which in the Western part of New York show such abundance of petroleum, in the eastern counties are altogether free from it.

It is necessary to be thus particular with respect to the geological position of the rock which forms the source of the petroleum; for as we have no trace of the Carboniferous Series remaining in Western Canada, we must search for the origin of the petroleum in that group of rocks which is known to yield it in abundance, and which is represented to a small extent in the most western counties of Upper Canada.

The Portage and Chemung groups extend from Michigan into Canada, entering the province near Kettle Point, Lake Huron, where the lowest members of this important group are exposed. They are there seen underlaid by limestone belonging to the Hamilton group, the series beneath them. The highly bituminous shales of the Portage and Chemung groups are also exposed on Bear Creek, in the township of Warwick, and in the township of Brooke. Petroleum springs, which doubtless come from this formation, are found in the townships of Enniskillen, and also in Mosa.

The reason why the Portage rocks of Michigan are not continuous with those of Pennsylvania, but are separated by a belt of the underlying Hamilton formation, has been very clearly shown by Sir Wm. Logan, in an article "On the Physical Structure of the Western District of Upper Canada," published in the *Canadian Journal* for August, 1854.

The area covered by the Portage rocks in Western Canada is very limited, when comparisons are made between their extensions in Pennsylvania and Michigan, where they occupy a region probably exceeding the whole of the settled parts of Upper Canada. Mr. Murray, of the Canadian Geological Survey, states that the Portage rocks in the western counties probably consist of two outlying patches, separated from one another by the Hamilton shales in the township of Euphemia. If this be the case, we shall have two rock oil or petroleum fields in Canada, in which that substance may be searched for by boring with considerable chance of success. These are the western field, including the townships of Plympton, Warwick, Brooke, Enniskillen, and perhaps Moore and Sarnia. The eastern field will be roughly shown by the townships of Camden, Zone and Mosa; but in so level a tract of country, it is very probable that those portions of the Portage and Chemung groups which have escaped denudation will be found over wider though perhaps more detached areas than is represented above.

Several important conclusions of a practical value may be derived from a knowledge of the extent of surface occupied by the rocks known to yield petroleum in Western Canada. The first is, that their thickness must be so small as to obviate the necessity of deep boring. If the borer passes through the Portage group without finding petroleum, and comes upon the underlying Hamilton shales, the operation should be pursued with extreme caution; for although petroleum is by no means uncommon in the bituminous shales of the Hamilton group, yet as these rocks have been bored in *search for coal* from one end of the State of New York to the other, at vast expense, without reaching rich petroleum springs, it cannot be regarded as a fruitful source of that material. Secondly, the supply of petroleum is likely to be soon exhausted in particular wells, until, by slow infiltration from higher to lower levels, the spring is replenished. Thirdly, the nature of the rock, which in some of its layers is compact, holding globules or drops of petroleum between the laminæ, will allow a copious spring to be struck in one locality, and yet within a few yards all attempts may be ineffectual. Fourthly, deep boring is to be avoided in the western counties. It will probably be very successful on the Michigan