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THE PETROLEUM, OR ROCK OIL OF CANADA.

For many years the Petroleum found floating on the surface of the Thames and Sydenham rivers, in the western part of the province, attracted some degree of attention, but it was not until the "rock oil" of Western Pennsylvania proved to be both abundant and of considerable commercial value that practical men directed their capital and industry to the so-called "oil springs" of Upper Canada. Now that public attention has been repeatedly called to the existence of these springs, and some of them have already acquired a certain degree of importance, as supplying material for a growing industry, it is time to enquire into the prospects which this new source of wealth offers to capital and enterprise, and how far we may suppose it susceptible of profitable extension.

In the first place, it is necessary to enquire into the source of supply and endeavour to ascertain its probable limits. This can best be done by examining into the origin of the petroleum or rock oil, and tracing the limits of those geological formations from which it is supposed to proceed.

There are two classes of bituminous substances which exist as natural deposits or exudations, and are often misnamed in popular descriptions. Some of these bodies are the probable result of the union of others with oxygen, derived from air or other sources.

They may be divided as follows:

1. Petroleums, or rock oils, or naphthas.
2. Bitumens or asphalts.

The members of the first class consist of two elements only, namely, carbon and hydrogen.

Those of the second class consist of carbon, hydrogen and oxygen.

Petroleum and others of its class result from the decomposition of organic substances of animal or vegetable origin, under a moderate temperature and pressure, in the absence of oxygen. Bitumens are probably the result of the oxydation of petroleums, and their hardness depends to a certain extent upon the amount of oxygen they contain.

All, or most true bitumens melt in boiling water; when they require a more elevated temperature to soften or liquify them, they receive the name of asphalts.

Bitumens and petroleums are found in all parts of the world, and in many countries have long been employed for economical purposes. In the United States, where rock oils have suddenly acquired great prominence, very extensive sources of supply exist.

On the Alleghany river, in the neighbourhood of Pittsburgh, a spring of petroleum was struck in boring for salt, which has been known to yield eighteen hundred barrels a day at one place only. In Kentucky, petroleum springs are not at all uncommon. In that part of Pennsylvania and New York which borders on Lake Erie, and in the north eastern part of Ohio, the rock from which the petroleum issues belongs to the Upper Devonian series. In other parts of Pennsylvania, in Ohio and Virginia, petroleum is found associated with the Carboniferous rocks, and probably proceeds from certain members of the series. It is in Western Pennsylvania that petroleum springs are at present most numerous and important. In the counties of Venango, Mercer and Warren, a new branch of industry is rapidly growing into great importance, and is in fact effecting a very beneficial influence upon the population and wealth of that part of Pennsylvania. The collateral branches of industry to which the preparation of the crude oil gives rise, are very valuable in themselves; and if the supply continues to keep pace with the appliances introduced to secure the raw material, it is not easy to estimate the value of the "oil region" of Pennsylvania, Ohio, Michigan, and south eastern New York.

The rock formation from which the petroleum of the north western part of Pennsylvania and the south-western counties of New York exudes, is probably that member of the Upper Devonian series which the New York geologists have denominated the Portage and Chemung Group. This group of rocks is of immense thickness in the United States, and is developed to a very great extent in Western Pennsylvania and in the State of Michigan. It is the Vergent Series of Rogers, the able State Geologist of Pennsylvania, and is supposed to be not less than 4,900 feet thick. It is the next group but one underlying the Coal series; and between it and the lowest member of the Carboniferous rocks there is interposed the Catskill Red Sandstone, the Ponent Red Sandstone of Rogers, which has a supposed thickness of 5000 feet. Twenty years ago, James Hall, the distinguished U. S. Geologist, described the Petroleum Springs in Chautaque County, N. Y., bordering Lake Erie, as exuding from rocks belonging to the Portage Group. Carbonaceous matter frequently occurs in their strata, and much money and time has been expended in the United States in an expensive and wholly fruitless search for coal, by persons who have been misled by the thin laminæ of bituminous matter which is