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THE TEST WELL AT ENNISKILLEN.

An important undertaking is in active progress at the Oil Springs, Enniskillen, for the alleged purpose of endeavouring to strike the subterraneous source of Petroleum from which the flowing wells in that township are thought to have been supplied. It is in contemplation to penetrate 1000 feet, if necessary, into the rock, with a view to ascertain whether there does or whether there does not exist a great reservoir of petroleum within the limits above mentioned. If a permanent supply of this valuable fluid should be obtained by this enterprise, the future of Oil Spring village is established; if the contrary should be the case, what then? In this article we propose to enumerate the most important known facts with respect to petroleum and its geological relations, and endeavour to exhibit the chances for and against a successful issue of this project.

Distribution of Petroleum in North America.

It is well known that petroleum is no novelty on this continent, but it is not so generally known that it exists in extraordinary abundance in a region remote from civilization, namely, in the North West Territory. More than seventy years ago Sir Alexander Mackenzie described the "bitumenous fountains" on the Athabaska River "into which a pole twenty feet long could be inserted without the least resistance." Sir John Richardson has also described the limestone beds on Athabaska River as covered with a bitumenous deposit upwards of one hundred feet thick. Further down the river there is a copious spring of mineral pitch issuing from a crevice in the cliff composed of sand and bitumen, it lies a few hundred yards from the river bank in the forest. "The whole country" in this part of the Athabaska River "is so full of bitumen that it flows readily into a pit dug a few feet below the surface." The limestone associated with the bitumens is referred to by Sir John Richardson as probably belonging to the Marcellus Shale, a formation represented in Canada by the base of the Hamilton group of rocks, the same which occurs in the township of Enniskillen. Petroleum exists in rocks of all geological ages, from the most ancient Lower Silurian to the comparatively modern Tertiary. It occurs in Canada in the Bird's-eye limestone on the

Montmorenci, and in the Trenton limestone at Pakenham, both of which are Lower Silurian rocks. On the great Manitoulin Island a spring issues from the Utica Slate, from which rock illuminating and lubricating oil was distilled at Collingwood some years ago. It is also found near Hamilton rising through the red shales of the Medina Sandstone, near the base of the Upper Silurian series. In the Niagara limestone it is comparatively abundant, and in the Corniferous limestone, a rock of Devonian age, natural springs occur. At the base of the Hamilton group it is very abundant in the North West Territory as before stated, and natural springs are found in this group at Enniskillen, coming probably from the underlying Corniferous limestone. In Ohio and Pennsylvania the oil is obtained from the Portage and Chemung group of rocks, also of Devonian age, and some of the wells are bored through Carboniferous strata.* The Triassic Shales at Southberry, Connecticut, far above the coal, yield a liquid petroleum; and in the Island of Trinidad petroleum is abundantly found in Tertiary rocks. Hence it appears that this substance exists in rocks belonging to all the grand divisions into which geologists have divided the different fossiliferous strata forming the crust of the earth, from the most ancient Palæozoic formations to those of Tertiary age.

It is still a subject much discussed among geologists as to the origin of petroleum, whether from vegetable or animal remains; probably the correct view lies between these extremes, namely, that petroleum may be produced from the decomposition under peculiar circumstances both from animals and vegetables. Dr. Hunt draws an important distinction between the rocks which contain true bitumen and the so called bitumenous shales. "Besides the rocks which contain true bitumen, we have what are called bitumenous shales, which, when heated, burn with flame, and by distillation at a high temperature, yield, besides inflammable gases, a portion of oil not unlike in its characters to petroleum. These are, in fact, argillaceous rocks intermixed with a portion of organic matter allied to peat or lignite, which by heat is decomposed and gives rise to oily hydrocarbons. These inflammable or lignitic shales, which may be conveniently distinguished by the name of *pyroschists*, (the brandschiefer of the Germans) are to be carefully distinguished from rocks containing ready formed bitumen: this being easily soluble in benzole or sulphure of carbon can be easily dissolved from the rocks in which it occurs, while the

* See Notes on the History of Petroleum or Rock Oil, by T. Sterry Hunt, M.S., F.R.S., in the *Canadian Naturalist and Geologist* for August, 1861.