

leum in a formation is far from being evidence that it exists in large quantities. Observation has shown that it does not exist in large quantities in any formation, except under certain intelligible conditions. Its presence in small quantities is to be expected.

It is an opinion almost universal among geologists that petroleum has been produced from organic remains. Hence, long before the discovery of the Eozoön in Laurentian rocks, it had been inferred that organic life existed upon our planet during the accumulation of those rocks, because, among other reasons, they afford conspicuous quantities of petroleum. Geologists are somewhat divided in opinion as to whether animal or vegetable organisms have afforded most of the native oil. Little dissent exists, however, from the doctrine that most of the oil occupying the pores and pockets of fossiliferous limestones has been derived from animal bodies, while that saturating shales and arising from shales has had a vegetable origin. As the oil of commerce is probably derived from the latter source, it appears that we are to regard our commercial oil as a vegetable product.

Petroleum and the other hydrocarbons are produced from organic matters by distillation in closed vessels. Any vegetable substance is capable of affording them. The refuse of the kitchen may be made to illuminate the mansion. Artificial distillation of any of the rocks containing organic remains gives rise to petroleum. Ordinary black shales abound in vegetable matter mostly in a state of comminution, and they readily afford large quantities of oil and gas. They are, in fact, distilled on the large scale in some European countries for the sake of these products. It has also been undertaken in this country, but without favorable results economically. Nature herself is engaged in this business, and competition with her is hazardous. Cannel coal, however, which is only a highly carbonaceous shale, was