

a ton, the value of the coke and other by-products is sufficient to pay all expenses, and many companies in England could afford to let their customers have the gas at a mere nominal price. But in districts where coal is dear and in large buildings not within reach of gas works, petroleum will become the cheapest source of illumination, and it has been satisfactorily shown in the city of Toronto that it can be manufactured with the utmost ease to burn without smoke or smell, and to give a light three times as brilliant as ordinary coal gas, and is capable of being produced at one half the cost. One gallon of petroleum, converted into gas by the process adopted in the works of Mr. J. E. Thomson of this city, produces more than 150 feet of gas possessing a very high illuminating power, a soft and agreeable light, with perfect immunity from smoke or smell. One gallon of petroleum weighs 8 lbs. 6 oz. and produces from 150 to 200 cubic feet of gas—a proportion considerably greater than that obtained from coal, even of the richest and best quality. Hence, there is every reason to believe that the manufacture of gas from petroleum will become general in large establishments, in rural districts, and in towns where coal is dear, not only in England but more particularly in France and many parts of Germany. In one town in Germany they manufacture gas from the fat they extract from soap suds, which are daily purchased throughout the town. It is easy to conceive that the crude petroleum of Canada would soon arrest this ingenious and expensive process.

As before remarked, a large number of patents have been taken out in France for the manufacture of patent fuel, and there can be no doubt that a very valuable if not an inexhaustible market may be found in France for the crude petroleum of Canada, so admirably adapted to form the means of utilizing combustible products which, without admixture with tar or similar substances, are wholly valueless. No doubt the facilities now presented for procuring an abundant and cheap supply of petroleum, would make numerous other products serviceable which are at present lost as waste, or bereft of half their value for the want of a medium to render them capable of being utilized.

#### **Its Use as a Fuel.**

Few but those who have visited France can form any idea of the high price of fuel in that country, or of the vast variety of methods which are employed to economize this necessary of life. Patents without number have been granted in France for the manufacture of "Artificial fuel." In order to explain this subject more thoroughly we subjoin one or two of the processes which are largely employed not only in Europe but also among the half civilized Orientals.

In the neighbourhood of the Caspian Sea, where petroleum springs are abundant, the inhabitants manufacture a fuel by impregnating clay with the combustible fluid; the clods are afterwards burned on an ordinary hearth. The Norwegians have long economized the sawdust of their mills by incorporating it with a little clay and tar and moulding it into the form of bricks. Of late years in England much attention has been given to artificial fuel in many districts, but not with much success, owing to the want of a suitable combustible, which petroleum is above all others best adapted to supply. In France charcoal is prepared from the refuse of the charcoal furnaces by mixing it with charred peat or spent tar and then adding tar or pitch. The materials are ground together and subjected to heat in close vessels to expel volatile gases. From seven to nine gallons of tar is mixed with two hundred weight of charcoal powder.

Gas used as fuel for culinary purposes is daily becoming more common in Europe. It is easy to understand why this source of fuel should be preferred where civilization and luxury have converted mere comforts into actual necessities of life, which are always secured if money can purchase them. In rural districts, where common fuel is often very expensive, gas manufactured in portable works would be largely used for culinary operations, as it now is where the supply of gas is constant and cheap. But there is no necessity to convert petroleum into gas in order to use it as fuel. Stoves have been constructed for the combustion of this substance without the use of a glass chimney and without the production of smoke. It will necessarily, from its cheapness, supersede alcohol, which is commonly used as fuel for cooking purposes during the summer months. And we may soon look for its adoption as fuel for the generation of steam in our ocean steamers, where economy in bulk and weight is so great a desideratum. Petroleum is, at it were, the essence of coal, and the question of its adoption as a steam generator is dependent upon the abundance of the supply, to which a satisfactory answer has recently been given by the "flowing wells" of Enniskillen.

#### **Its Use as an Antiseptic or Wood-preserver.**

The cost of relaying the wooden ties and sleepers of railways is enormous. Our readers are familiar with Kyanizing and similar processes. Wood steeped in petroleum, or what is better, having petroleum forced into its pores by pressure, is proof against decay for many years.

#### **Its Use as a Lubricator.**

Even the crude oil is sought for with eagerness for this purpose in many workshops in England where swift motion is employed. When mixed with fat or resin it acquires greater consistency,