

Perhaps I am not saying anything about the points which I should have submitted to you. Later on, if there is anything you should like to know, I shall be glad to answer.

There are several other points to which I must pass on. We are living in an age of adulterations as you know. When you let your child go to buy candy, it is no longer pure; the candy your children buy, instead of being made of sugar, is composed mostly of glucose. Luckily we have very little adulteration with bread and butter, yet we have our suspicions of meat sometimes. There are cases known in which very poor oils have been passed off on customers by adulterating same, which I propose to describe to you. If you take lye and boil it with vegetable oil, you will find it becomes soapy in some respects. It is somewhat like liquid soap. You can, therefore, see that a low grade fluid oil may be transformed into a viscous oil by the addition of liquid soap. This adulteration would pass unnoticed in most cases. These oils gum badly and are unsatisfactory. I am going to tell you how to detect this trouble. In order to make this test you require a solution of what chemists call metaphosphoric acid, and you take some of the oil, dissolve it in a little gasoline, and to this solution add a little of the acid solution, and if there is any soap in the liquid it becomes turbid, and is low grade. A good oil under these circumstances shows no change whatever or such a slight change that no one would notice it. I have never heard of an instance in Toronto, and I fancy the only places it is likely to occur is in large places like New York or London.

Then, there is another point which may be of interest to some of you. It is an important matter for those who use oil for machinery out-doors in severe weather. The test is quite simple, and is made by taking ordinary oil vial and filling it with oil. You then put a thermometer in it, and put it into some salt and ice. You will then notice that the oil becomes solid at a definite temperature. This test varies with different oils. The Russian oil has a very low freezing point; it is equally as good and free from objectionable constituents if it has been properly prepared as the American, its viscosity is the same.

Then there is another important feature to be noted in testing oil, and this it is difficult to speak about. It is what the engineer calls "body," and curiously enough we find in two samples of oil quite a different behaviour in this connection. For example, you might notice that a lubricating oil sometimes seems to have difficulty in adhering to the bearing. It behaves as though the bearing was covered with water and could not adhere. Animal and vegetable oils are more oily than the mineral oils. Mineral oil appears to be less valuable from a point of view of body, than the vegetable or animal oils, and for that reason the practice has grown up in later years of using blended oils, that is 80 per cent. vegetable and animal oils