ENGINEERING CLUB OF CANADA.

One of the holes should be large enough to admit holes in it. a thermometer, and the other should be about one-half inch diameter. So far these materials will not cost you anything practically, but the most important thing you require is a thermometer and it is, I am sorry to say, somewhat expensive, as you have to buy something a little better than the ordinary article. It is a high temperature thermometer filled with mercury, and with this instrument, temperatures can be measured up to 550 degrees centigrade, which is somewhere in the neighborhood of 1000 degrees Fahr. A thermometer reading 400 degrees centigrade is quite ample for testing these oils, however. You can have any sort of stand on which to set up this apparatus. The crucible is filled up with oil to about one half inch from the top. You then put the metal cover on. Next you need heat. The best thing you can use for this purpose is a burner. I do not know that you all have burners handy. I have a type of burner here which we use extensively. It is a Bunsen burner. Your crucible is heated by means of this lamp. There is one important point which you must not forget: that is if you heat this oil too quickly, say in a minute, there will not be time enough for it to give off sufficient inflammable liquid to be detected. If you heat it very slowly, say taking four or five days, the inflammable vapor will leak away. Heat it so that the temperature rises about 15 degrees per minute. It is not difficult with a little practice to do this. You find as the oil gets hotter you will have to turn the flame of the burner down a little more. When the oil begins to get up to about 200 degrees centigrade, when you are working with engine oil, remove the cover from one of the holes in the lid and pass a match or taper across the opening, and at every five degrees rise you repeat that practice. At one temperature you will notice there is a little puff of flame, and then you immediately read your thermometer. That point is called the flash point, and this is the temperature at which the oil gives off the explosive vapor. It would be dangerous in large quantities. Underwriters are fairly unanimous in calling for a temperature of 350 degrees Fahn., or about 200 degrees centigrade. If the oil flashes above that point you may rest assured it is quite safe for indoor use. An oil that flashes below that point, however, you suspect. A low flash point almost always denotes that the oil has been adulterated by the addition of some more volatile lower grade material.

You remove the cover entirely now and continue the heating, passing the taper across the surface of the oil until finally the whole of the oil takes fire. That is the fire point. You may often find this mentioned in the specifications for oils. The fire point is not of such value as the flash point.

Having satisfied ourselves about the safety of the oil from this point of view, we pass on next to another important ques-