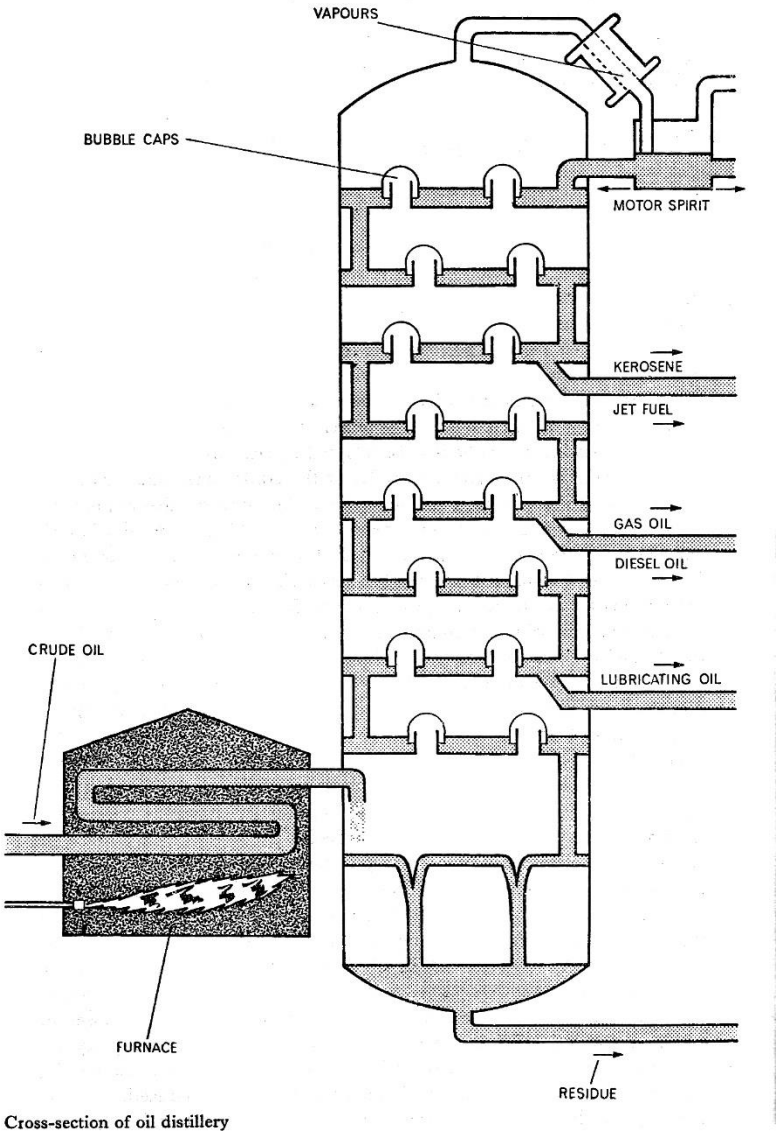
PETROLEUM

Petroleum is the largest source of liquid fuel, and, in spite of attempts to develop synthetic fuels, and the continued use of solid fuels, world consumption of petroleum products is about four times greater now than in 1940.

Crude petroleum oil from different oilfields is never exactly identical in composition. Although all petroleum is composed essentially of a number of' hydrocarbons, they are present in varying proportions in each deposit, and the properties of each deposit have to be evaluated. Samples are subjected to a series of tests in the laboratory, the object of which is largely to determine the correct processing methods to be adopted in each case.

Petroleum is not normally used today in the crude state. The mixture of oils of which it is composed must be separated out into a number of products such as petrol, aviation spirit, kerosene, diesel oils and lubricants, all of which have special purposes. The main method of separation used in refineries is fractional distillation, although further processing is normally required to produce marketable petroleum products. The different hydrocarbons present in petroleum have different boiling temperatures, and the fractions can therefore be isolated according to their boiling temperatures. Petrol, for instance, is a mixture of the lower-boiling hydrocarbons, with boiling temperatures ranging from 100° to 400° C. Diesel oils on the other hand have boiling temperatures of upwards of 400° C.



Cross-section of oil distillery

Distillation was originally carried out in batch-stills and, although this is still done for special purposes, the development of the pipe-still has revolutionised refinery processes, since it allows continuous vaporisation and rectification of the fractions. The pipe-still consists of a brick-lined furnace, in which is fitted a battery of tubes, through which the crude oil is pumped. The oil is heated, and partial vaporisation occurs. The oil then enters the fractionating tower, where it is distilled by coming into contact with condensed vapour which has previously been evolved from the still. Fraction of different boiling ranges are drawn off at different points in the tower, or, in some plants, in a series of towers, each one distilling successively heavier fractions.

The heavier distillates, such as gas oil, undergo various other processes, of which the most important is known as cracking. In this process, they are heated to a temperature of about 550° C, as a result of which the heavier molecules are broken up, lighter oils such as petrol being produced. Catalytic cracking, in which silicon compounds are used as catalysts to aid the process of decomposition, gives higher octane petrols. These are widely used as motor-car fuels, since the high octane value reduces the tendency of the fuel to detonation.

1. **Comprehension**
   A. What is the tone of the passage?
   B. With reference to the text name different types of fuels.
   C. Suggest a suitable topic for the second paragraph.
   D. How is properties of petroleum tested?
   E. What might be the topic of the paragraph that follows the lst paragraph?
   F. The writer is in the impression that petroleum drawn from carious sources are not same in their properties. Support this with facts.
   G. Tell the writer's attitude towards 'distillation'.
   H. According to the text, what do you mean by 'cracking'?
2. **Short questions**
   A. Except the first paragraph of the text the writer talks about distillation. Collect those views in a single paragraph in you own words as far as practicable.
   B. Write a simple description of the diagram named a 'cross- section of oil distillery.'
3. **Long Discussion questions**
   A. Comment on 'Nothing can replace petroleum as the largest source of liquid fuel'. You can agree or disagree, or both.
   B. In context of Nepal what might be better option for petroleum? Will it be more cheaper and easily accessible?