ORGANIC CHEMISTRY

Non-chemist can't help being surprised to learn that many chemical compounds are obtained from living things. For example, sugars, ethanol, methane, urea, etc.

What all these compounds have in common are the elements carbon and hydrogen. Thus, it can be said that nearly all compounds obtained from living things are carbon compounds.

In the early days of chemistry the compounds obtained from living things were not even thought of to be made in the laboratory. The idea was that there were special pnicfsses going on inside the organism (living thing). The special processes were believed to be essential for the formation of the compounds. So, chemists considered the compounds from organisms to be somehow special and different from "ordinary" chemicals that could be made in the laboratory. They called chemicals from living things *organic chemicals* and the others *inorganic chemicals.*

However, in 1828 a chemist called Wohler showed organic chemicals to be just ordinary chemical substances. He did this by converting an inorganic chemical into an organic one simply by heating it in the laboratory. Gradually, more and more organic chemicals were shown to be just like ordinary chemicals. But we still use the terms "organic" and "inorganic" to divide chemicals into two classes. Nowadays, however, we use the term "organic compounds" to mean *carbon compounds*, there being some exceptions to the rule.

Most of the organic chemicals we have nowadays are man-made and are obtained directly from organisms. However, the main raw material for manufacturing organic chemicals is *petroleum*, it having been formed in the past from marine organisms.

Why do we have to separate a branch of chemistry just for carbon compounds? Couldn't its compounds be included with those of other elements?

There's a simple reason for keeping carbon compounds separate: there are just too many of them. *There are more compounds of carbon than compounds of all the other elements put together*. Organic chemistry is sure to be a very large branch of chemistry. It includes millions of compounds. Most of these are compounds of carbon involving just a few other nonmetallic elements, for example, hydrogen, nitrogen, oxygen and the halogens.

Why does carbon have so many more compounds than other elements? What is special about it? The answer to these questions is: carbon atoms have the special property of being able to join together to form chains of atoms. The chains may be short, or they may be hundreds or even thousands of atoms long.

The carbon chain being practically any length, the number of possible hydrocarbons is enormous.