

You have learnt in your previous classes that what sets man apart from all other animals is his ability to think. At the beginning, when he still had not developed this ability sufficiently to understand the things around him, he lived almost like all other animals, in fear of his surroundings. Gradually, as his understanding improved, he started making changes in his surroundings to make his life safer and more comfortable. Through the ages, this process has made man what he is today. Even today, our knowledge improves continuously and helps us enrich the quality of our lives.

SCIENCE

The knowledge and understanding of everything around us can be called science. We can also define science as the knowledge gained through systematic observation and experiments. Thus, science includes the study of the earth, air, water, climate, plants, animals, and everything that surrounds us. It also includes the study of the way our body works, the way things around us change, the way the heavenly bodies move and many other things.

Through centuries of study, we have accumulated a vast amount of knowledge that must be divided into smaller parts for convenience. This is why we divide science into two broad groups, viz., (a) the study of living beings, and (b) the study of nonliving things. The first group is called **life sciences**, and can be further divided into subjects such as zoology and botany. The second group is called **material sciences**, and can be divided into subjects such as physics, chemistry and geology. Each of these can also be divided again. All these subjects that together make up science are also called **disciplines**.

Physics

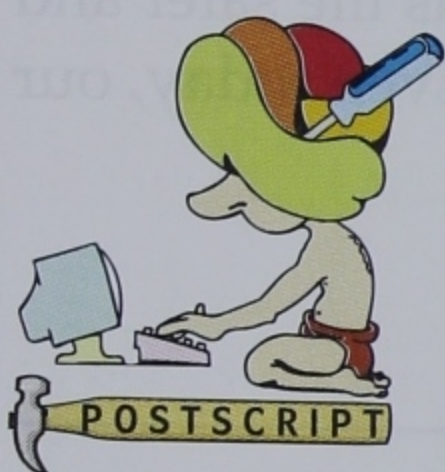
The most general description of physics is that it is the study of nature and its laws. One may argue that this description can apply equally well to other branches of science. So, we may use a somewhat different description and say that physics is the study of matter and energy. You know already that everything in the universe basically consists of matter and energy. You will learn more about matter and energy in this book.

Our description of physics may make you think that physics covers most of our activities and many of the things that go on around us. You may, therefore, wonder how it is possible to study all this. The task is made simpler if you have an understanding of the **laws of physics**, which apply to most of the 'happenings' around us. Learning these laws and knowing how to apply them is like

learning the alphabet and the grammar of a language. Once you know a language, you can read any book or express anything you feel. Similarly, once you know the laws of physics you will understand why things happen the way they do.

Pleasures of physics

As you gradually explore this subject, you will become aware of its benefits and pleasures. There are applications of physics in almost everything that you see around you. All the uses of electricity around you, the different modes of transport and communications, and most of the gadgets or appliances of daily use have been made possible by the application of physics in various ways. As your understanding of physics increases, you will begin to understand how all these things actually work. A whole new world will gradually open up before your eyes.



Next time you watch athletes doing the high jump on TV, notice that when they go over the bar, they face upwards, with the whole body bent like a bow over the bar. This style was introduced by an athlete named Dick Fosbury, who was a student of physics and applied his knowledge to the sport. He won the Olympic gold medal in 1968.



Fig. 1.1 An athlete using the technique developed by Dick Fosbury