commonly known antibiotics which are made from fungi and bacteria. The antibiotics are manufactured by growing specific microorganisms and are used to cure a variety of diseases.

Antibiotics are even mixed with the feed of livestock and poultry to check microbial infection in animals. They are also used to control many plant diseases.

It is important to remember that antibiotics should be taken only on the advice of a qualified doctor. Also you must finish the course prescribed by the doctor. If you take antibiotics when not needed or in wrong doses, it may make the drug less effective when you might need it in future. Also antibiotics taken unnecessarily may kill the beneficial bacteria in the body. Antibiotics, however, are not effective against cold and flu as these are caused by viruses.

Vaccine

Why are children/ infants given vaccination?

When a disease-carrying microbe enters our body, the body produces **antibodies** to fight the invader. The body also remembers how to fight the microbe if it enters again. So, if dead or weakened microbes are introduced in a healthy body, the body fights and kills them by producing suitable antibodies. The antibodies remain in the body and we are protected from the disease-causing microbes. This is how a vaccine works. Several diseases, including cholera, tuberculosis, smallpox and hepatitis can be prevented by vaccination.

Edward Jenner discovered the vaccine for small-pox in 1798.

In your childhood, you must have been given injections to protect yourself against several diseases. Can you prepare a list of these diseases? You may take help from your parents.

It is essential to protect all children against these diseases. Necessary vaccines are available in the nearby hospitals. You might have seen the advertisement on T.V. and newspapers regarding protection of children against polio under Pulse Polio Program. Polio drops given to children are actually a vaccine.

A worldwide campaign against smallpox has finally led to its eradication from most parts of the world.

These days vaccines are made on a large scale from microorganisms to protect humans and other animals from several diseases.

Increasing Soil Fertility

Some bacteria and blue green algae (Fig. 2.7) are able to fix nitrogen from the atmosphere to enrich soil with nitrogen and increase its fertility. These microbes are commonly called biological nitrogen fixers.

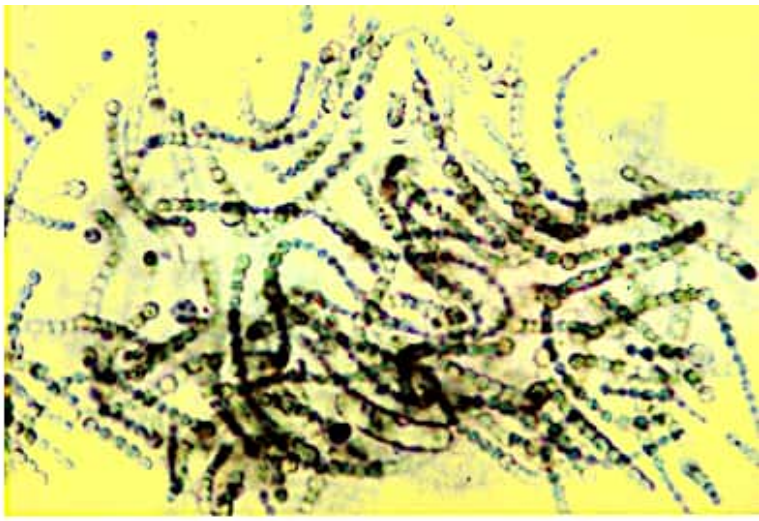

Fig. 2.7 : *The Nitrogen fixing blue green algae*

Cleaning the Environment

Boojho and Paheli had observed the school gardener making manure. Along with their friends, they collected wastes of plants, vegetables and fruits from nearby houses and gardens. They put them in a pit meant for waste disposal. After some time, it decomposed and got converted to manure. Boojho and Paheli wanted to know how this could happen.

Activity 2.5

Take two pots and fill each pot half with soil. Mark them A and B. Put plant waste in pot A and things like polythene bags, empty glass bottles and broken plastic toys in pot B. Put the pots aside. Observe them after 3-4 weeks.

released in the process could be used by the plants again.

Did you notice that in pot B, the polythene bags, empty glasses, bottles and broken toy parts did not undergo any such change? The microbes could not 'act' on them and convert them into manure.

You often see large amounts of dead organic matter in the form of decaying plants and sometimes dead animals on the ground. You find that they disappear after some time. This is because the microorganisms decompose dead organic waste of plants and animals converting them into simple substances. These substances are again used by other plants and animals. Thus, microorganisms can be used to degrade the harmful and smelly substances and thereby clean