

I

Experiments for the Beginning Biologist

The World of Plants

A biologist is a person who studies about living organisms. People have been searching for thousands of years for the mysteries of life. Many of these mysteries have been revealed, but there is much yet to be learned.

Plants are living organisms, and there are more than 350,000 types of plants on the earth. People who choose to specifically study plants are called botanists. Botany, the study of plants, is a good starting point for learning about biology because plants and animals have basic similarities. The building blocks of life, cells, are in all life forms, plants as well as animals. Plants allow you to study functions that occur in all life forms.

Upon completion of Part I, you will be able to answer many questions relating to the needs of living organisms, their care, growth, and changes.

The material in this book barely scrapes the surface of known information about plants. These experiments were chosen to whet your appetite so that you will have a desire to study more about the wonderful carpet of plants that **covers** our world.

1. Spicy Escape

Purpose To demonstrate diffusion.

Materials *eye dropper*
vanilla extract
balloon, use a small size
shoebox

Procedure

- *Place 15 drops of vanilla extract inside the deflated balloon. Be careful not to get any of the vanilla on the outside of the balloon.*

Inflate the balloon to a size that will comfortably fit inside the shoebox and tie the open end.

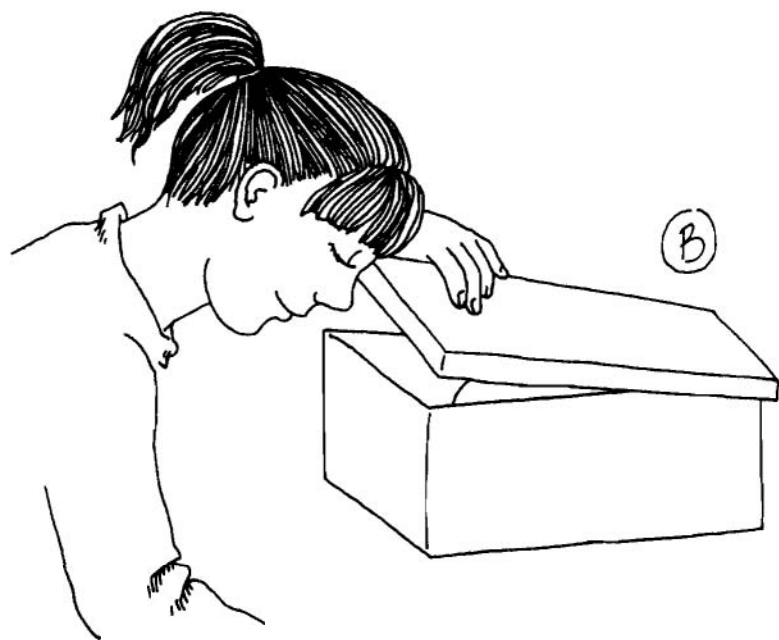
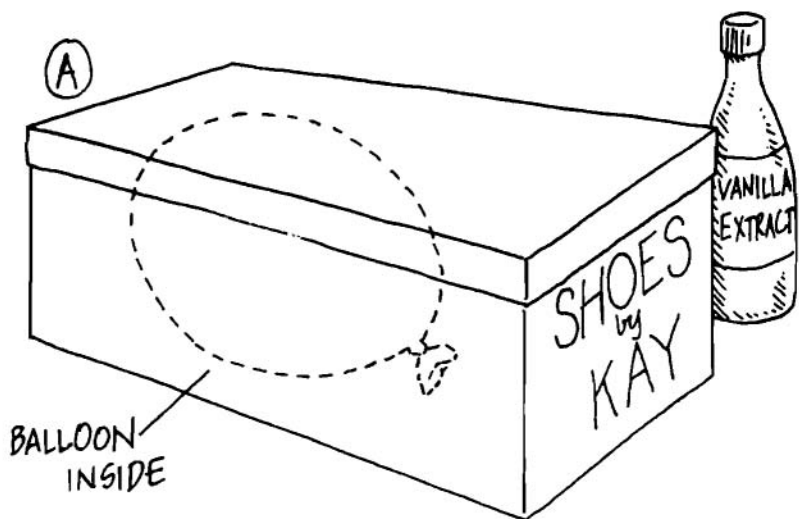
Place the balloon in the empty shoebox. Leave the balloon in the closed box for one hour.

Open the box and smell the air inside.

Results The air smells like vanilla. The box is still dry.

Why? The balloon appears to be solid, but it actually has very small invisible holes all over its surface. The liquid vanilla molecules are too large to pass through the holes, but the molecules of vanilla vapor are smaller than the holes and pass through.

The escaped **vanilla** vapor moves throughout the air in the shoebox. And once the shoebox is open, through the air in the room. This spreading out of a material from a concentrated (crowded with material) area to a less **concentrated** area is called **diffusion**. If you wait long enough, the diffusion will result in a uniform mixture of the vanilla vapors and the air with which it mixes.



99. Spinning

Purpose To demonstrate the effects of spinning the body around rapidly.

Materials *yourself*

Procedure

Position yourself outdoors in an open area.

■ *Turn around rapidly five times.*

a Sit on the ground.

Results You will feel dizzy for a short time after you have **stopped** turning.

Why? The liquid in the canals of the ear begins to move as the body turns. When the body stops revolving, the liquid continues to turn, and this motion is interpreted by the brain to mean the body is still turning.