1.3

Physical and Chemical Changes

Some of the most important uses for a substance are those that result from change. We experience many such changes every day. Applying heat to cook an egg, burning gasoline in a car, freezing water to make ice cubes, and mixing oil and vinegar for a salad dressing are just a few examples. Recognizing and recording what was done to make the change occur is an important first step. Discovering a use for the substance afterward requires observing its new properties.

Physical Change

In a **physical change**, the substance involved remains the same. It may change form or state, however. All changes of state (**Figure 1**) are physical changes. How many changes of state might you observe in the candle wax when the candle in **Figure 2** is burning? If you answered two, you are correct. There are actually two more, which are very difficult to observe. Look carefully at **Figure 1**. Can you predict what they might be?

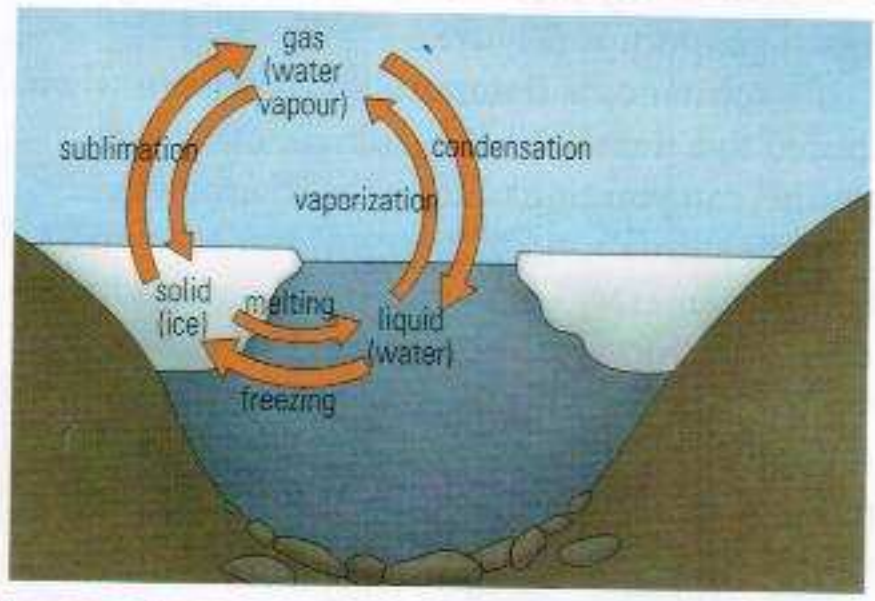

Figure 1
Changes of state

Try This

Activity Observing a Burning Candle

E1 E2 You can observe a lot about how a substance changes simply by observing a burning candle (**Figure 2**). Your goal is to make as many observations about the properties of the candle as you can in the time period specified by your teacher. You may want to divide your time in the following way:

> Be sure to tie back long hair when working around an open flame.

- Use your senses and any measuring instruments you have to describe as many properties as you can before the candle is lit.
- Light the candle. Again, use your senses and any measuring instruments to describe any new properties that you observe.
- Carefully blow out the candle. Describe any new properties that you observe.

Figure 2

SKILLS HANDBOOK: E1 Qualitative Observations E2 Quantitative Observations