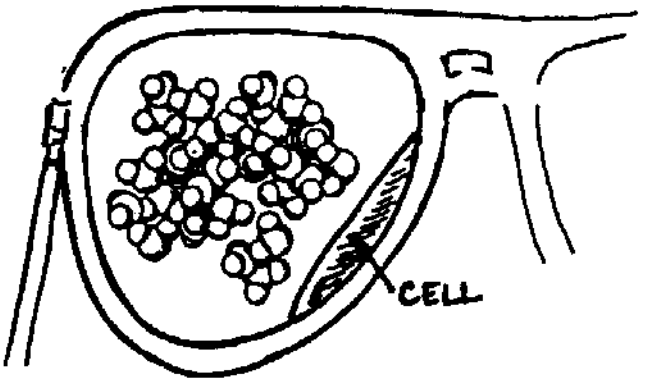
Category IV Physical Science Examples

Representing ideas effectively

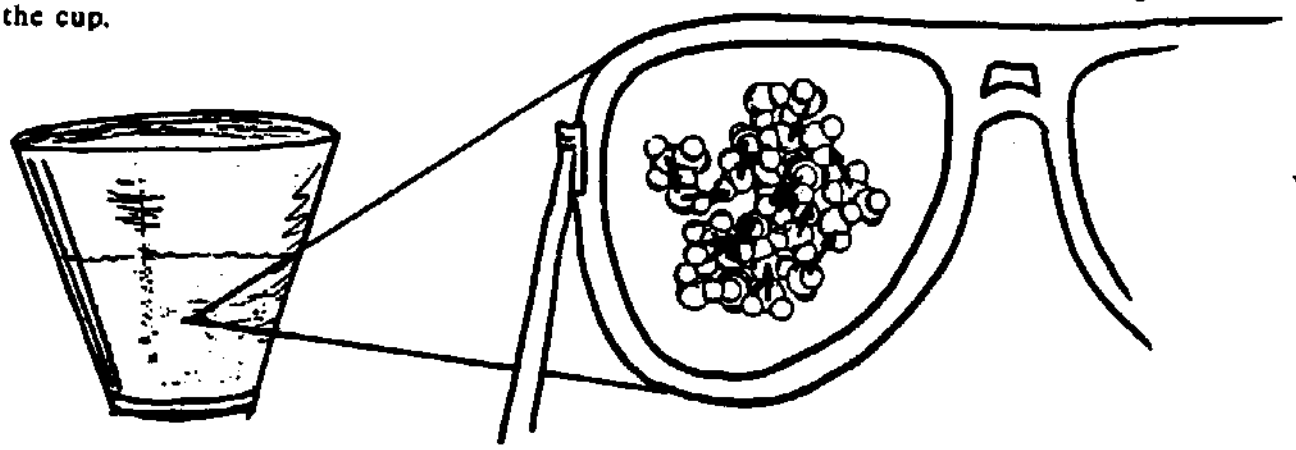
Matter and Molecules - Example 2

In attempting to represent the key idea that “All matter is made up of atoms, which are far too small to see directly through a microscope,” the unit uses drawings that are misleading and could reinforce the erroneous notion that molecules are *in* substances. For example, a drawing shows a single cell floating in a drop of water with a border around the cell (*Science Book*, p. **7s**). The view through the “magic glasses” does not make clear that the border, too, is made of molecules.

Suppose our magic eyeglasses could show us a single cell floating in a drop of water. What would it look like? Something like the picture below. (The picture can't show the whole cell because a cell is <u>so</u> much bigger than the water molecules.)



The molecules of liquid water are always moving. They are constantly sliding past and bumping into each other. They <u>never</u> stop. They are moving in all different directions. This movement goes on all the time, even when the water is just sitting in the cup.



The two important points we have talked about in this lesson are: liquid water is made of very tiny, tiny pieces called water molecules, and water molecules are always moving. In Lessons 1 and 2, we said that ice (solid water), liquid water, and water vapor (gaseous water) are the same substance.

Then in this lesson, you learned how all three states of water are the same. They are made of water molecules which are constantly moving. Now, can you guess what is different about the molecules in the three states of water? In Lesson 1.4, you will learn about how ice, liquid water, and water vapor are different. You will also learn how ice, liquid water, and water vapor are alike. First, though, try answering some questions about what you learned in this lesson.

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Do Question Set 1.3 in your Activity Book

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