Perform, at your homes, the two following experiments:

Experiment 4. Pulverize one-half of a teaspoonful of starch, and boil it in two tablespoonfuls of water, stirring it meantime. What phenomena occur? What do they teach? What becomes of the water?

Experiment 5. Fill a bowl half full with peas or beans. Just cover them with tepid water, and set away for the night. Examine in the morning. What phenomena do you observe? Explain each.

Strictly speaking, are bodies of matter impenetrable? What only is impenetrable? When you drive a nail into wood, do you make the two bodies occupy the same space at the same time? Do the wood and the iron occupy the same space? How only can you explain this phenomenon, consistently with the principles of impenetrability of matter?

§ 5. **Theory of the constitution of matter.** — For reasons which appear above, together with many others that will appear as our knowledge of matter is extended, physicists have generally adopted the following theory of the constitution of matter. *Every visible body of matter is composed of exceedingly small particles, called molecules; in other words, every body is the sum of its molecules. No two molecules of matter in the universe are in contact with each other. Every molecule of a body is separated from its neighbors, on all sides, by inconceivably small spaces. Every molecule is in quivering motion in its little space, moving back and forth between its neighbors, and rebounding from them. When we heat a body we simply cause the molecules to move more rapidly through their spaces; so they strike harder blows on their neighbors, and usually push them away a very little; hence, the size of the body increases.*

This theory seems, at first, little more than an extravagant guess. But if it shall be found that this theory, and no other theory that has been proposed, will enable us to account for most of the known phenomena of matter, then we shall be content to adopt it till a better can be produced.