Classes of Chemical Action.—The breaking down of red precipitate (mercuric oxide) into mercury and oxygen, and its formation from these two elements, are examples of two classes of chemical action which we shall often meet with; it will be well therefore to give the names by which they are known, and define the terms:

Analysis *is the breaking down of a compound into two or more substances of unlike properties.*

Synthesis *is the building up of a compound from two or more substances of unlike properties.*

There are two other classes of chemical action which we shall come across and define later on. They are *Replacement* (p. 42) and *Metathesis* (p. 105).

QUESTIONS

1. Mention some of the chemical changes that were earliest *of use to* the human race.

2. What chemical changes do you think were earliest *studied* by man?

3. What was the principal factor in bringing about the "chemical revolution" towards the end of the eighteenth century?

4. Why do you think that early investigators thought there was a loss in weight during the burning of a candle or ordinary fuels?

5. Criticise the following definitions, and correct them if necessary: (*a*) A compound is a substance that can be broken up into two or more parts; (*b*) A compound is a substance that can be broken up into different substances.

6. Distinguish between compounds and elements; between compounds and mixtures.

7. A wax match is placed close to the wick of a small candle which is then put into a large flask fitted with a stopper; the whole is balanced on a scale-pan. Then the stopper is removed, the head of the match touched with a red-hot wire and the stopper very quickly replaced. The match ignites the candle which burns for some time and then goes out. Why does it go out? Why do the flask and contents show no change in weight?