continues to burn and a white ash is left. The pupils should withdraw this ash and examine it, as in Experiment 1, to see if it is the same material. They find that it is, and they should be led to see that as it contains oxygen this must have been extracted from the water vapour, and so oxygen is one constituent of water.

As oxygen is quite a different substance from water, and as it is contained in water, the latter probably has at least one other constituent.

Is this constituent left in the flask? If a part is evaporated, no solid is left, so the other constituent is not a solid. The liquid left is exactly like water, and hence there is no other liquid mixed with it, so the natural inference is that the other constituent is a gas. Let the pupils try to devise a method of collecting it.

The following experiment, which should be performed by the teacher, shows how this constituent can be collected. Fit up a flask with a rubber stopper through which is passed an elbow glass tube having a piece of rubber tubing attached to the outer end. Have a spiral of magnesium wire projecting from the bottom of the rubber stopper, and have ready a bottle of water inverted in the pneumatic trough. Now boil a little water in the flask, ignite the wire, thrust into the flask while the water is still boiling, press the cork, and hold there until no more gas collects in the gas bottle. (Be sure to withdraw the rubber tube from the water before taking the flame away from the flask.) Test this gas with a burning splinter and it will be found to act in an entirely different manner from any of the gases studied so far. The name of the gas may now be given. It is hydrogen.

Next show that other metals, such as sodium and potassium, act in a similar way on water, except that the