Notice the difference in behaviour when these substances burn in air and oxygen; compare the products formed in the two cases, and let the pupils decide whether the oxygen acts in a similar way in both cases, except that it is more concentrated in one case and hence gives more intense results.

To obtain a supply of nitrogen, treat several bottles of air with iron filings as in Experiment 6 (2), wetting the bag of iron filings, and test the nitrogen as the oxygen was tested. The pupils will see that the gas is quite inert.

EXPERIMENT 9. *To examine a mixture of oxygen and nitrogen in the same proportion as these are present in air.*

Apparatus required: Pickle bottles, iron filings, oxygen generating apparatus, phosphorus, sulphur, etc.

Extract the oxygen from three bottles of air by means of damp iron filings, as in Experiment 6 (2). Fill another bottle with oxygen and let it stand until the gas is at the same temperature as in the other bottles. Bring the mouth of the bottle of oxygen under the mouths of the bottles of nitrogen in turn and displace the contained water with the oxygen. While doing this, look closely for any visible change in the mixed gases. Feel the bottle; or, better, immediately after mixing, take a bottle out of the water and thrust a thermometer into the gas. No changes of any kind can be observed.

After the gases have had time to mix, take the bottles from the water by slipping glass plates under the mouths, and burn in them phosphorus, sulphur, and a splinter of wood; test the products as when these were burned in oxygen. Now burn these same substances in bottles of air and test the products in the same way. The conclusions the pupil should be able to draw from this experiment are