

DETERMINATION OF PERCENTAGE BY VOLUME OF OXYGEN IN THE AIR.

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Fit a gas-collecting bottle or flask of 75-200 cc. capacity with a one-hole rubber stopper. Remove the stopper and fit it on a dropping funnel with a constricted stem so that the stem reaches two or three inches below the stopper.

Completely fill the bottle with water and force in the stopper and funnel, the stopcock being open so that the water will be forced up into the funnel. Close the cock and pour out the water that is in the funnel. Open the cock and remove the stopper and funnel from the bottle allowing the water in the stem to flow into the bottle. With an ordinary measuring cylinder measure the water in the bottle and record the volume as "Volume of Air."

Again adjust the stopper and funnel to the empty bottle in the same position as before. The cock should be open. Close the cock and introduce into the funnel 20 cc. alkaline pyrogallic solution. Open the cock and allow a few drops of the solution to flow into the bottle. If the solution does not flow, set the bottle into a beaker of cold water for a moment. As soon as a few drops have entered the bottle close the cock and remove the bottle from the cold water. Carefully rotate the bottle so as to wet the sides with the solution. Open the cock and continue rotating and shaking the bottle until no more solution flows into it. This usually takes about five minutes. Care must be taken that at no time the funnel be allowed to become empty so as to permit air to enter the bottle. The funnel should be filled with water when most of the pyrogallic solution has run into the bottle.

When no more water will run into the bottle, close the cock and pour out the water in the funnel. Open the cock and remove the stopper and funnel as before, allowing the stem to drain into the bottle. Measure the solution in the bottle and record the volume as "Volume of Oxygen".

Without further precaution consistent results of close to 20% can be obtained. By using a large pan or crock of water and getting the air to a constant temperature before adding, and while adding, the absorbing solution, more accurate results can be obtained with little added effort.