USE OF LABORATORY EQUIPEMENT

A. Laboratory Burners

Almost all laboratory burners used today are modifications of a design by the German chemist Robert Bunsen. In Bunsen's fundamental design, also widely used in domestic and industrial gas burners, gas and air are premixed by admitting the gas at a relatively high velocity from a jet in the base of the burner. This rapidly moving stream of gas causes air to be drawn into the barrel from side ports and to mix with the gas before entering the combustion zone at the top of the burner.

The burner is connected to a gas cock by a short length of rubber or plastic tubing. With some burners the gas cock is turned to the **fully on** position when the burner is in use, and the amount of gas admitted to the burner is controlled by adjusting a needle valve in the base of the burner. In burners that do not have this needle valve, the gas flow is regulated by partly opening or closing the gas cock. With either type of burner **the gas should always be turned off at the gas cock when the burner is not in use** (to avoid possible dangerous gas leakage from the needle valve or old tubing).

Operation of the Burner. Examine the construction of your burner and familiarize yourself with its operation. A burner is usually lighted with the air inlet ports nearly closed. The ports are closed by rotating the barrel of the burner in a clockwise direction. After the gas has been turned on and lighted, the size and quality of the flame is adjusted by admitting air and regulating the flow of gas. Air is admitted by rotating the barrel; gas is regulated with the needle valve, if present, or the gas cock. Insufficient air will cause a luminous yellow, smoky flame; too much air will cause the flame to be noisy and possibly blow out. A Bunson burner flame that is satisfactory for most purpose should be blue, such a flame is said to be "nonluminous." Note that the hottest region is immediately above the bright blue cone of a well-adjusted flame.