

APPARATUS TO ILLUSTRATE BOYLE'S LAW.

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The apparatus sketched possesses certain qualities which are desirable in any apparatus to be used in the laboratory in the proof of Boyle's Law. It is convenient, does not bring mercury in contact with rubber tubing, can readily be made air tight, and does not require a skilled glass-blower to construct.

Secure a bulb tube. Seal this into a long glass tube of uniform bore, about one-fourth of the distance from one end. Bend this tube at a right angle on each side of the bulb, so that the two arms and the bulb lie in the same plane. A piece of glass rod, cut square at the lower end, may be sealed into the end of P, or, better still, it may be cemented in with Canada balsam. Mercury is then introduced through A, and if it is desired to use pressures less than one atmosphere, P may be slightly heated, provided care is taken not to heat it near the plug. A piece of rubber tubing (not shown in the cut), having a bicycle valve cemented in one end is securely fastened over A. The whole is fastened to a vertical board. A scale is placed beside each tube, or still better, a mirror scale is placed behind each tube.

A small bicycle pump is used to force air into B. This will increase the pressure in P, and this pressure may be determined by the difference in the height of the two mercury columns plus the atmospheric pressure. The volume of air is proportional to the distance between the mercury and the plug in P, if the bore of the tube is uniform.

This apparatus is made on the same principle as a piece devised by Mr. N. H. Wilkinson of the Western High School, Detroit. A description of his apparatus may be found in the Proceedings of the Michigan Schoolmasters' Club for 1899.