

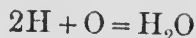
Properties.—*Physical Properties.* If we examine the substance produced by the action of the zinc and sulphuric acid, we observe first, that it is a gas, and that it is colorless. Prepared from ordinary zinc, which is impure, it has a slightly disagreeable odor, but hydrogen itself has no smell or taste. (It is not poisonous, but of course a person could not live in it for any length of time, as he needs oxygen.)

Hydrogen is the lightest substance known; one litre of it, at 0° and 760 mm. (see p. 45), weighs 0.09 gr. On this account it is sometimes used for inflating balloons, though the cheaper coal-gas is generally employed.

EXPERIMENT.—If a glass tube about 10 cm. long, and loosely filled with cotton wool, be connected to the delivery tube of the generator used above and a clay tobacco-pipe to this, soap bubbles may be blown with the hydrogen, and they will float in the air.

Hydrogen has been liquified and solidified. Its melting point is -260° and it boils, under atmospheric pressure, at -252.5°.

Chemical Properties.—At ordinary temperatures, hydrogen is quite inactive. If, however, it be heated, it will burn in air or in oxygen.



EXPERIMENT.—Remove one of the bottles full of hydrogen from the trough (Exp. p. 39), and, holding it upside down, thrust a lighted splinter or taper up into it. Does the taper continue to burn? Is it lighted again as you withdraw it? Does hydrogen support combustion? Does it burn?

Draw a glass tube out to a jet and substitute it for the delivery tube of the generator. Having wrapped a towel round the generator, light the gas escaping from the jet and note the color of the flame. Hold a dry beaker over the flame. What happens? What does this behaviour indicate?

Hydrogen does not support combustion, but it burns with a pale blue, very hot flame, producing water. (The yellow color of the flame burning at the jet in the experiment is due to a trace of vapor of sodium from the heated glass.)