

under the same conditions. The 20cc of olefiant gas at standard temperature and pressure, which take part on the formation of the water will become $20 \times \frac{373}{273} \times \frac{760}{740} \text{cc} = 28.065 \text{cc}$ at 100°C and 740 m.m pressure, therefore the water that is produced will occupy twice this volume, so that the whole volume occupied by the resulting gas will be twice $56.129 \text{cc} = 112.258 \text{cc}$. composed of water and olefiant gas. The 20cc of olefiant gas which take part in the formation of water weigh $11\frac{3}{10} \times \frac{2}{1} = 2\frac{3}{5}$ grams, but from the equation 28 grams of olefiant gas yield 36 grams of water. $\therefore 2\frac{3}{5}$ grains of olefiant gas will yield $2\frac{3}{5}$ grains water; but 1 gram of water taken at 4°C and 760 m.m pressure measures 1cc therefore $2\frac{3}{5}$ grams will measure $2\frac{3}{5}$ of a cubic centimeter.

The relation of gases which are called supporters of combustion to those which are said to be combustible is well illustrated by the following experiment. In schools

that are not provided with gas the apparatus may be attached to a receiver containing hydrogen, marsh gas or olefiant gas.

Into the base of an ordinary lamp-chimney fit tightly a cork bearing two tubes projecting about an inch above the cork.

The tubes should be drawn to a point as in an ordinary hydrogen jet; the tips should also be slightly bent so as to bring them close together. Connect the lower end of one of the tubes with a gas jet by means of a rubber tube and leave the lower end of the other tube open. Remove the lamp chimney, turn on the gas and ignite it at the tip of the glass tube, then replace the chimney pressing it firmly on the cork. In a very short time the flame is seen to pass over to the other tube and thus the air which is ascending through it is burning in coal gas. The coal gas which is escaping from the top of the chimney may be ignited and thus shew coal gas burning in air at the same time that air is burning in coal gas.

CONTEMPORARY LITERATURE.

The Christmas number of the *Illustrated London News* is an unusually good issue. Q., Anthony Hope and the late Lord Brabourne contribute short stories. There are numerous engravings and illustrations by such well-known artists as Bernard, Aldin, Browne and others. One of the best of the pretty colored supplements is "Anne Hathaway's Cottage," by W. S. Coleman.

One of the first of the Christmas numbers is the *Scribner's*. Rudyard Kipling contributes a long poem called "McAndrews' Hymn;" a Scotch engineer's ideas on his engines. Robert Grant has a seasonable short story. There is an

article on "George Frederick Watts," by Cosmo Monkhouse, the illustrations of which are exquisitely beautiful. Archibald Lampman has a poem entitled the "Woodcutter's Hut," and George W. Cable's story is concluded. One would, if space allowed, mention every article in commendation.

"A Boy of the First Empire by" Elbridge S. Brooks is begun in the November *St. Nicholas*. "Palmer Cox's Brownies," still caper across the page, and "Jack Ballister's Fortunes" are continued. There is an interesting article on that absorbing present topic "Golf," by Helen Marshall North.