

minated because of some harmful habit, and their place adequately filled by another species which popular opinion pronounces less injurious; for, though multiplied to infinity, this latter species can never perform other than those offices assigned to it by Nature. A thrush can no more supplant the fly-catcher and destroy the winged vermin than a humming-bird can turn wood-pecker and bore for its insect food in the bark and rotten wood of trees. No, they are every one essential, and not even the universally maligned crow could be altogether spared. There are certain limits, of course, to these needs, but, within the limits, the extermination of any bird would make itself manifest in some pernicious manner, and that, too, in a very short time.

Chemistry.

By J. F. GODFREY.

OXYGEN.

NO. IV.

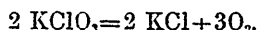
ATOMIC WEIGHT, 16. SYMBOL, O. SPECIFIC GRAVITY, 1.1.

Oxygen is the most widely diffused of all the elements, forming one-fifth part of the air by volume, eight-ninths of water by weight, and is a constituent of nearly all the substances that go to form the crust of the earth. It forms about one-half of our planet, and nearly three-fourths of animals and plants.

The name "oxygen" signifies acid-producer from the opinion formerly entertained that oxygen was the essential principle of all acids. It is now known that several of the acids contain

no oxygen, and hence we conclude that those acids which contain oxygen do not owe their acidity to that substance.

Oxygen is generally prepared from some oxide or salt containing it. If a little mercuric oxide be heated in a test tube, it will be observed to gradually lessen in bulk, and finally to disappear altogether, while on the cooler portions of the tube a coating of pure mercury will be formed, which, when touched, will roll down the sides of the tube in liquid globules. If a red coal be now placed in the tube it will be seen to blaze quite brightly, showing the presence of oxygen in the tube. But the more common way of preparing oxygen for experiments is by heating potassic chlorate and black oxide of manganese in a flask or retort, and catching the oxygen evolved over the pneumatic trough. Potassic chlorate is represented by the formula KClO_3 . When heat is applied to this substance the action may be represented by the following equation:—



For all practical purposes a common Florence flask will answer for generating oxygen from potassic chlorate. A cheap pneumatic trough can be obtained from any tinsmith. I have used one for some time, made of zinc, about eighteen inches long and twelve wide, and six deep; two cleats should be soldered on to the side of the trough, upon which a shelf is placed, pierced with one or more holes, for the purpose of allowing the gas to pass into the jars. Glass jars of any kind may be used to collect the gas.

Place about two ounces of potassic chlorate, and one-third as much manganese dioxide together in the flask; fasten tightly in the neck of the flask, a cork, which has been pierced, so as to allow the end of a bent tube to pass through it. Place the other