

to decompose oxidized bodies, except in a few special cases; but its temperature, and consequently its decomposing or deoxidizing power, becomes much increased by the action of the blowpipe, as shewn below. The blue portion of flame possesses also reducing powers, but of comparatively feeble intensity, as the carbon is there able to obtain from the atmosphere a partial supply of oxygen. Finally, in the outer or feebly luminous envelope, in which complete combustion takes place, the flame attains its highest temperature; and, having all the oxygen it requires from the surrounding atmosphere, it exerts an oxidizing influence on bodies placed in contact with it, since most bodies absorb oxygen when ignited in the free air.

In subjecting a body to the action of the blowpipe, we seek: (1) to raise its temperature to as high a degree as possible, so as to test the relative fusibility of the substance; or (2) to oxidize it, or cause it, if an oxide, to combine with a larger amount of oxygen; or (3) to reduce it,* either to the metallic state, or to a lower degree of oxidation. The first and second of these effects may be produced by the same kind of flame, known as an oxidating flame (or O. F.), the position of the substance being slightly different; whilst the third effect is obtained by a reducing flame (or R. F.), in which the yellow portion is developed as much as possible, and the substance kept within it, so as to be cut off from contact with the atmosphere.

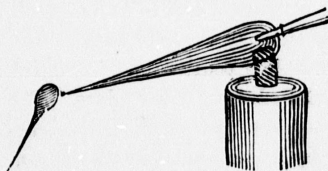


FIG. 7.

and its reducing or yellow portion becomes obliterated. It forms a long narrow blue cone, surrounded by its feebly luminous mantle. The body to be oxidized should be held a short distance beyond the point of the cone, as in Fig. 7; but to test its fusion, it must be held in contact with this, or even a little within the flame. In this position, many substances, as those which contain lithia, strontia, baryta,

* A substance in metallurgical language is said to be "reduced," or to undergo "reduction," when, from the condition of an oxidized (or other) compound, it becomes converted into metal.

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