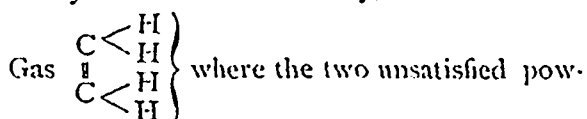


and the power of each is satisfied by that of the other; in water, the O has its two powers satisfied by two atoms of H; in ammonia it has three powers, and hence has three atoms of H to satisfy it; and in marsh gas, C has four H to satisfy it. The following are the principal

Monads.	Dyads.	Triads	Tetrads.
Cl	Ba	An	Mn
F	Ca	N	C
H	Cu	B	Si
I	Mg	St	Sn
K	Hg	Al	Pt
Ag	O	Sb	Ir
Na	S	As	Os
Br	Zn	P	Pd
Li	Pb	Fl	Rh

It must be distinctly remembered that this classification is not absolute—the same element often exhibits different atomicities, as with C and N noted below. Elements belonging to the same group can replace each other in compounds generally. It requires two monads to satisfy a dyad, three monads for a triad; one monad and a dyad will satisfy a triad, and a triad and diad will satisfy a pentad, and so on. So far all is very good, but now the irregularities begin. In the Nitrogen series N_2O , N_2O_2 , N_2O_3 , N_2O_4 and N_2C_5 , N may be anything from a monad to a tetrad; in CO a tetrad is satisfied by a dyad; for anomalies like these no satisfactory explanation has been given. It has been suggested that, in some cases, the elements exhibiting the anomalies may satisfy each other mutually, as in Olefiant



ers of C may be mutually satisfied by combining the two atoms of C together, but this is purely conjectural. However, such an explanation utterly fails to explain CO where the elements are dissimilar. All elements, except perhaps *monads*, exhibit this irregular atomicity, and no good explanation is given for it. It must be noticed, however, that most radicals have a *predominant atomicity*; that they form one series of compounds more

stable than the others. Thus, of the two compounds of Chlorine and Tin, that which has least Chlorine Sn Cl has a great affinity for more, which it rapidly takes up, passing into the more stable compound Sn Cl₄; so Cuprous Oxide readily passes into the more stable Cupric Oxide CO, hence it is usual to assign a radical to the class indicated by its atomicity in its most stable compound. Atomicity explains why elements enter into combination much more energetically in the *nascent state* than when free. When an atom is in the *nascent state* none of its combining powers are satisfied, hence it eagerly grasps at any other atom with which it can unite. The atomicity of an element is usually marked by small dashes as O^{II}, N^{III}, or thus, C^{iv}, P^v, Mn^{vi}, by small Roman figures.

A *symbol* stands for one *atom* of an elementary body; a *formula* represents, at least, one *molecule* of a body, simple or compound.

The definition of *monad*, *dyad*, *triad*, *tetrads*, *pentad* and *hexad* has been anticipated in the discussion on atomicity above; but briefly a *monad* is an element that can replace Hydrogen, or some monad element equivalent to Hydrogen, as Chlorine, atom for atom in a compound; a *dyad* can replace two of H, &c.

Hydrates or *Hydroxides* are bodies derived from water by replacing one atom of the H by an atom of some other radical, thus $\left. \begin{array}{c} H \\ H \end{array} \right\} O$, when one H is replaced it forms Caustic Potash or Potassic Hydrate, $\left. \begin{array}{c} K \\ H \end{array} \right\} O$. Compounds containing H₂O are called *hydrous* bodies, and when these bodies form crystals the H₂O they contain is called *water of crystallization*; when this water is driven off the body is not changed chemically, but has simply become *anhydrous*. Now *anhydrides* are compounds from which the elements of water have been removed, and their essential chemical (acid) properties are thus greatly altered. Thus Carbonic acid, H₂CO₃, when deprived of the elements of water becomes CO₂ (erroneously called Carbonic acid), a very different substance.

The *crith* is the weight of one litre of Hy-