outside inward—a method which has rarely led to definite results in scientific research.

45. Structural and stereo-chemistry.

A department of chemical science called structural chemistry—which has quite recently developed into stereo-chemistry—has during the last fifty years of the century been working by the opposite method. Even those organic chemists who ridiculed the notion that a chemical formula, which on the surface of the paper on which it is written cannot help making use of geometrical position and proximities, is in any way a picture of the arrangements of atoms in real space, were nevertheless forced to avail themselves of this symbolism. About the middle of the century, especially through the researches of Frankland, followed by those of Couper and Kekulé, the phenomenon of multiple proportions was explained by introducing the notion of saturation. An element which can combine with one or more atoms of the same or of different elements or definite chemical compounds was looked upon as having a chemical affinity which might be wholly or only partially satisfied. The different compounds arising out of such combinations would then represent different degrees of saturation of the first element; and it was evident that elements as well as compounds could be arranged according to the degrees of saturation of which they were capable. A compound containing elements which possessed a greater capacity for saturation than the combination afforded was called unsaturated. The term valency was introduced to denote the degrees of saturation of elements and compounds, which were therefore mono-, di-, or poly-valent, according to the compounds existing in fixed simple or

46. Valency.