

atomic theory could not rest contented with a knowledge of the relative weights of elementary atoms, but would have to be completed by a geometrical conception of the arrangement of the elementary particles in all the three dimensions of solid extension.”¹

But though a further development of the atomic view, not only “*pondere*” but also “*mensura*,” may be expected in the near future, the progress of chemistry, which has benefited so much by this view of nature, will not depend exclusively upon this line of thought, nor perhaps to so large an extent as it has done during the greater part of the century. We have seen how the atomic theory of Dalton rose to the position of being more than a convenient symbolism, and how it became a physical theory of matter and of nature mainly by the support which it received from a different line of reasoning.

40.
Defects and
insufficiency
of the
atomic view.

The development of this line of reasoning led to the employment of the statistical method, a view quite foreign to other branches of physical science.

The kinetic theory of gases itself had been elaborated in connection with still another line of reasoning, with the endeavour to get a clearer and more comprehensive view of the nature of the different forces which the astronomical as well as the atomic views had merely accepted as given quantities without further examination. We are thus necessarily led on to trace the history of

¹ See Wollaston's memoir, “On Super-acid and Sub-acid Salts,” read before the Royal Society, Jan. 8, 1808 (‘Phil. Trans.’, 1808, p. 96, &c.), where he even suggests the

examination of the stability of aggregates of particles in different configurations, mentioning the tetrahedron, since become celebrated through Pasteur and Van't Hoff.