

these other views of nature, which up to the middle of the century had grown up independently.

The next chapter will accordingly deal with the kinetic view of nature.

At the time when the atomic theory was firmly established and defined, the great founders of chemical science were well aware that the investigation and measurement of chemical forces, of what was termed affinity, was just as important a problem as the fixing of the combining weights and the formulæ of chemical compounds.

Accordingly we find men like Bergmann, Berthollet, Davy, Berzelius, and Faraday all propounding or suggesting theories of chemical affinity, some of which, like the electro-chemical theory, remained long in use. The difficulty, however, which was experienced in defining, and still more in measuring, chemical affinity, and the absence of a general system for the computation and calculation of all physical quantities, retarded the progress of this line of research compared with the study of the weights or proportions of mass which existed in chemical processes, and which were more easily ascertained by means of the balance, and made intelligible by the atomic theory.

The tendency of chemical reasoning during the first half of the century lay therefore in the direction of a one-sided development of the knowledge of matter, its definite constituents and infinite compounds, rather than in a study of that equally important but more subtle quantity, now called energy, which appears or disappears, but is never created or destroyed in physical or chemical processes.

A clear recognition of this fundamental doctrine—nay,