44. Difference in application to living and lifeless units.

great difference which exists between dealing with a vast number of lifeless and of living units. This difference becomes evident if we consider that in the former case the number of units is unalterable and the units are indestructible; in the latter the elements or units are subject to enormous increase and corresponding destruction, generally with a preponderance of the first. In the kinetic theory of gases we have to consider, in every finite system, the conservation or persistence of mass and motion, the two units we deal with. To these two properties of an immensely large crowd we have to reduce the various phenomena of pressure, temperature, volume, available or unavailable energy. In the vast crowd of gemmules which build up a new organism or regenerate an existing one, we have to deal with a continual influx or creation of new units and a continual extinction and ejection of old or dead ones. Without venturing on any theory as to how this state of things has come about, we may see that the mathematics and statistics of such crowds must be different from those referring to stable, lifeless assemblages. The twofold task arises of formulating the new problems and solving them. To the extent that this is possible we shall be able to deal mathematically with the great problem of variability; and for the practical application of these mathematical formulæ we shall have to collect long series of facts and data of measurements—the material which has to be statistically arranged and sifted, and which is to confirm the conclusions and test the results which calculation has brought out.