one particular order of substances as the result of our analysis—an order only found in nature in connection with matter that has been living—and these substances we speak of as proteids, or proteins. Save for water and certain very simple salts of sodium and potassium, these proteins are the only bodies common to all forms of matter that have been endowed with life. There are plenty of other substances which we may gain from certain orders of living matter—chlorophyll, starches, fats, and so on, but these are not universally distributed. The proteins are the one order of substances derivable from all animate bodies. We may express this in another way by saying that life is immediately associated with the presence of proteins. This, however, is not absolutely correct; we are not convinced that the proteins as such are actually present in living matter—in fact when we isolate these proteins they do not exhibit the properties which we associate with life: they cannot move, they cannot grow, they are insensitive to stimuli. We only know that dead organic matter yields proteins. It is more correct to say that life is associated with the presence of *proteidogenous* matter—of matter which in dying, as again in certain of its activities while living, yields proteins.

But so universal, so essential is this association, that clearly the first step to a comprehension of living matter must be gained through a study of these proteins and their properties, or to repeat, the phenomena of living are clearly bound up with the processes of association and dissociation of bodies of this particular order. For more than fifty years the physiological chemists have been working at the problem of the constitution of these proteins. At first the problem seemed hopeless. It was found that they were formed of carbon, hydrogen, oxygen, nitrogen, sulphur, but the formula of constitution was something appalling. Common salt, Na. Cl., for example, consists of one atom of chlorine (Cl.) joined to one atom of sodium (Na.). But in these proteins the amount of sulphur to be obtained is so minute compared with amount of the other constituents that obviously the molecules are of enormous size. Take, for example, one of the proteins which since it can be obtained in a crystalline form, must be regarded as among the less complex, namely hemoglobin, the protein which gives the red colour to the corpuscles of the blood. Its molecular composition is somewhere in the neighbourhood of

712[1] 1130[2] 214[3] 245[4] 1[5] 2[6]

The molecular weight of water, formed of two parts of hydrogen to one of oxygen, is 16, the average molecular weight of the proteins has been

[1] Carbon. [2] Hydrogen. [3] Nitrogen. [4] Oxygen. [5] Iron. [6] Sulphur.