we also know that the red blood corpuscles in vertebrate animals convey oxygen in a concentrated form[1] through all the organs, giving it up wherever it may be wanted, the real chemical process concerned in the action of chlorophyll is not cleared up;[2] and "no one has been able hitherto to explain, by a reference to physical laws, the active functions of the heart and muscular wall," by which the circulation of the blood is effected.[3]

In the explanation of many physiological phenomena no idea has proved more fruitful than the conception of natural selection, introduced by Darwin to explain the growing diversity and the purposefulness of organisms. Coupled with the cellular theory, which looks upon every living organism as a society of self-accommodating individual units or cells, forced by circumstances into differentiation of form and into divided labour or function, it relieved biologists of that spectre of vitalism which still survived after Lotze and Du Bois-Reymond had placed the creative and formative influence outside of the mechanism—as the watchmaker lives outside of the watch, which exhibits only mechanical contrivances. That which puzzles the spectator of the watch, as it does the spectator of every

[1] See Bunge, 'Physiological Chemistry,' p. 275.

[2] "Iron plays an important part in vegetable life: we know that chlorophyll granules cannot be formed without it. If plants are allowed to grow in nutritive solutions free from iron, the leaves are colourless, but become green as soon as an iron salt is added to the fluid in which the roots are immersed. It is even sufficient merely to brush the surface of the colourless leaf with a solution of an iron salt to cause the appearance of the green colour in the part thus painted. Chlorophyll itself contains no iron, and we do not know in what way the iron is concerned in its production" (Bunge, *loc. cit.*, p. 25). See also Hertwig, 'The Cell,' p. 153.

[3] Bunge, p. 7; cf. also p. 275.