

ination, insomuch as the different behaviour of different parts of the cellular body towards organic staining solutions reveals to the observer differences of structure otherwise indistinguishable. Yet Professor Pfeffer,¹ who has studied the absorbing powers of cellular substances with much care, states that these cannot in the least be foretold, but can only be determined empirically; nor is the fact that cells require some substances for their life, while others are harmful, sufficient to enable us to predict that either will be absorbed or rejected. Again, hybridisation has been much studied by gardeners and breeders, and also, since the time of Darwin, by naturalists; nevertheless, the result of cross-fertilisation of individuals belonging "to different families or species, or even only to different varieties," cannot be theoretically foretold, but "can only be discovered by means of experiment."²

This ignorance in which we are still placed as to the forms as well as functions of living matter, has been a subject of much comment by biologists all through the

¹ See W. Pfeffer, 'Ueber Aufnahme von Anilinfarben in lebende Zellen.' Untersuchungen aus dem botanischen Institut zu Tübingen. Quoted by Hertwig, 'The Cell,' p. 136.

² Hertwig, 'The Cell,' p. 310. Another point, strongly urged by Claude Bernard, is, that a knowledge of structure in living beings—*i.e.*, anatomical knowledge—in no wise suffices to explain the functions, does not lead to physiological knowledge. See 'La Science Expérimentale,' p. 105, "L'impuissance de l'anatomie à nous apprendre les fonctions organiques devient surtout évidente dans les cas particuliers où elle est

réduite à elle-même. Pour les organes sur les usages desquels la physiologie expérimentale n'a encore rien dit, l'anatomie reste absolument muette. C'est ce qui a lieu par exemple pour la rate, les capsules surrénales, le corps thyroïde, &c., tous organes dont nous connaissons parfaitement la texture anatomique, mais dont nous ignorons complètement les fonctions. De même, quand sur un animal on découvre un tissu nouveau et sans analogue dans d'autres organismes, l'anatomie est incapable d'en dévoiler les propriétés vitales."