

CHAPTER II.

NUTRITION IN VEGETABLES.

§ 1. *Food of Plants.*

THE simplest kind of nutrition is that presented to us by the vegetable kingdom, where water may be considered as the general vehicle of the nutriment received. Before the discoveries of modern chemistry, it was very generally believed that plants could subsist on water alone; and Boyle, and Van Helmont, in particular, endeavoured to establish, by experiment, the truth of this opinion. The latter of these physiologists planted a willow in a certain quantity of earth, the weight of which he had previously ascertained with great care; and, during five years, he kept it moistened with rain-water alone, which he imagined was perfectly pure. At the end of this period, he found that the earth had scarcely diminished in weight, while the willow had grown into a tree, and had acquired an additional weight of one hundred and fifty pounds: whence he concluded^d that the water had been the only source of its nourishment. But it does not seem to have been, at that time, known, that rain-water always contains atmospheric air, and frequently, also, other substances, and that it cannot, therefore, be regarded as absolutely pure water: nor does it appear that any precautions were taken to ascertain that the water actually employed was wholly free from foreign matter, which, it is easy to conceive, it might have held in solution. In an experiment of Duhamel, on the other hand a horse-chestnut tree and an oak, exposed to the open air, and watered with distilled water alone, the former for three and the latter for eight years, were kept alive, in-