

food as to justify the high price at which they are sold. It is worthy of notice that the grounds upon which these substances are offered have been somewhat changed. They were originally called "concentrated foods," a term clearly borrowed from that used in describing manures, and intended to lead to the belief that the nutritive elements of the plant food are found in a guano or superphosphate. This view of the matter is exceedingly specious and attractive, but a very little consideration suffices to show that it is entirely fallacious. A manure can be concentrated, because it contains many substances of little or no use to the plants. Thus it would be possible, though not practically economical, to take farm-yard manure containing about 75 per cent. of water, and by simply drying it, to concentrate four tons into one. It would be even possible to go still further, and to extract from it the ammonia, phosphoric acid, and other substances required by the plant, and so to reduce it to a still smaller bulk; but no such concentration is practicable with the food of animals. The two great kingdoms of organised beings are, no doubt, made up of exactly the same chemical elements, but the plant is able to take its food in the form of simple compounds, such as the ammonia, carbonic acid, &c., and from them to build up the most complex constituents of its frame. But animals possess no such power; their food must be supplied to them in the form of those complex and bulky compounds which the plant alone can produce, and which the animal only modifies to a slight extent in the process of assimilation. Hence it follows that it is only theoretically possible to concentrate the food of animals to a very limited extent, because the quantity of innutritious matters each of them contains is small, and it is *practically* impossible to do it at all, because there are no processes known by which the innutritious matters can be removed in such a manner as to leave the nutritive substances in a state in which they can be used as food. In the grains of the cereals the only absolutely innutritious substances are water and a small quantity of woody fibre, of which the latter cannot be extracted without entirely destroying the grain; and, though the former may be expelled by heat, it is rapidly reabsorbed from the air.

The food of an animal cannot therefore be concentrated, and the introduction of the word "condimental" instead of the "concentrated" food by the makers of some of these articles must be taken as a tacit admission that this view of the case cannot be defended. The fact is, that analysis at once shows that in these substances there has really been no concentration. A minute examination of a number of them recently made in the laboratory, which will appear in the forthcoming number of the "Transactions," has shown that there has been no attempt to concentrate in the sense in which that word is usually understood, for they all contain just as

much water and woody fibre as other vegetable substances, and are, in fact, mixtures of the most ordinary materials, consisting of Indian corn, rice, bean meal, ground carob beans, and other similar substances, along with small quantities of aromatic seeds, and in some instances a bitter substance, apparently genian. It is absurd to suppose that the contents of a small tin measure holding half a pint of these substances can be used to replace one half of the ordinary food of an ox or a horse, and their inventors, seeing that as these facts became known to the farmer their position would become untenable, have taken refuge behind the aromatics and bitters they contain, and have asserted that their effect is condimental, and that they act by promoting digestion and causing the animal to extract and assimilate a larger quantity of the nutritive matters of its ordinary food. They have obviously gone upon the commonly received opinion, which attributes to salt and similar substances this effect—a view which the facts I have already detailed by no means countenance. There is, in fact, not the slightest reason to suppose that the substances contained in these have any such effect. They consist, in addition to the grains already mentioned, chiefly of fennugreek and caraway seeds, and one of those I have examined contained so large a quantity of turmeric that it might almost be described as a curry powder. Nothing definite is known regarding the action of these substances on the system, there being no experiments such as those by which the effects of salt have been determined; and there is no evidence to support the view that they are capable of producing a more complete assimilation of the food, but every reason to believe the reverse. In fact, when a dispassionate view of the matter is taken, I think that it can scarcely be doubted that, if small quantities of caraway or other aromatic seeds were given to animals, and their weights carefully determined, it would be found that they are quite without effect. It must be noticed that there have been no attempts on the part of the "discoverers" to produce such accurate experiments in support of their views, although there have been plenty of general testimonials, such as every quack medicine can produce by the score, and abundance of vague declamation regarding their wonderful effects. The plain fact is, that science does not give the slightest support to the idea that these substances have any effect whatever; and in saying so, I am only stating an opinion in which all chemists will concur, and which has, indeed, been often stated before. Its accuracy has just as often been denied by the makers of these articles, but it has never been disproved, nor will that be possible until they can produce the precise results of trustworthy experiments in support of their substances. But even admitting the accuracy of all the statements put forth by the makers of their food, there is another question which merits attention, and that is the