

food; whilst the amount of increase in weight was exactly the same in the two cases. In fact, the results are so nearly absolutely identical that the difference cannot, perhaps, be fairly attributed to any intrinsic difference in the character of the food. But it is, at any rate, clear that nothing was gained by adding to the barley meal and bran one-fifth of its weight of food costing about five times as much money.

It is recommended that these foods be used in comparatively small proportion to the total food consumed; the animals thus having mainly to rely on ordinary food, the comparatively innutritious matters of which, such as bran, straw, &c., are thereby rendered palatable and nutritious. Mr. Lawes however, contends that no evidence has been brought forward to show that these manufactured foods will so stimulate digestion as either to extract more of its already existing nutritious matters, or to render the woody fibre of the coarse foods mentioned more directly serviceable to the nourishment of the animals. All kinds of live stock, especially such as are in a growing or fattening state, require, in their daily food, a given amount of digestible constituents; such as starch, sugar, pectine, gum, oil, nitrogenous compounds, &c., all of which they must obtain from their food. No condiment or highly concentrated preparations, by acting as a stimulant, can adequately supply the waste and wants of the body, caused by respiration and perspiration, the loss by urine and feces; the gain therefore in weight of fat, flesh, bone, &c., must all come from constituents actually contained in the food.

Mr. Lawes refers to some very elaborate experiments which he made on the feeding of animals at Rothamsted several years ago,—the results of which were published in the agricultural and scientific journals of the day,—when it was clearly ascertained that the ordinary foods, when in proper admixture with one another, supplied the several constituents far more economically, than mixtures in which some of the constituents, (starch, sugar or oil, for instance) were employed in a comparatively pure state. So that unless cheaper sources of food can be discovered than exist in hay and grain, &c., we cannot hope effectually and economically to replace the latter by any special manufactured foods for stock. It has been urged by the venders of concentrated foods that, as plants are rapidly pushed on by special, stimulating manures, so can the growth of animals by the prepared foods in question. But the analogy between plants and animals in this respect does not hold good. The supply of waste and increase of bulk in animals, it has been shown, are effected by the supply of materials contained in the ordinary food supplied them; whereas the greater bulk of matter contained in the plant is not derived from any special, concentrated, stimulating manure that may be applied, but essentially consists from materials derived from the atmosphere, and such as naturally belong to the soil, and are therefore dependent only in a subordinate degree on the will or skill of man.

Mr. Lawes further observes, that the virtues which such preparations do really possess over and above those which could be secured at one-fourth or one-