

Prof. WAY stated that his object in the present lectures was to call attention to the principles enunciated by Jethro Tull fully a century ago, and to make such quotations from his work as would seem most forcibly to illustrate his views and the arguments by which they were supported. In doing so Mr. Way wished it clearly to be understood that he was not advocating any system or practice founded upon those principles, but simply of pointing out how far the ideas of an author who wrote almost before the dawn of modern chemical science, were compatible with the facts and laws which have been since recognised and established. As might be anticipated, wherever Tull attempted any scientific explanation of facts, the terms he employed were antiquated and obsolete—in accordance with the vague and fanciful theories of the older chemists and physiologists but utterly inconsistent with the present state of these sciences. Still, in the midst of all these crudities there might be seen a large amount of philosophical reasoning; and those who carefully studied the writings of Tull would find that many of the discoveries in agricultural science which are accorded to philosophers of the present day, were more or less clearly anticipated and announced by the author in question. Cobbett, to whom we are indebted for the most convenient edition of Tull's book, takes occasion in his preface to pay a deserved compliment to the excellence of its contents, and to remark that the re-publication of the work would strip many modern agricultural writers of their borrowed plumage. The great principle of Tull was, that the soil and the air together contained all that was necessary, without the aid of manure, for the production of luxuriant vegetation; but that, in order to render the one and the other available for this end, it was necessary that the soil should be opened up by abundant pulverization and comminution of its parts.

The arguments with which this view was sustained were most forcible and convincing. The better to illustrate his meaning, he had compared the parts of the earth to which the roots of plants attach themselves with the grass or herbage on which animals feed. Thus the fissures or openings through which the roots penetrate, and the internal surface upon which they spread their delicate fibre, constitute, in Tull's language, the "pasture of plants"—a most happy expression, and one which facilitates in the mind the comprehension of his subsequent reasonings. So, then, as an animal will grow and fatten according to the suitability in quality and sufficiency quantity of the food to which it has access, in the same manner the rapidity of growth and the luxuriance of a plant will depend upon the nature and abundance of the "pasture" provided for it in the recess of the soil. But the pasture of plants differs from that of animals in this important respect—that whilst in the latter case the quantity can only be increased

by taking in more surface, the pasture of plants may be indefinitely extended and renewed by pulverization of the soil, which is constantly exposing new surfaces to the roots. Nothing can be more true, as Tull says, than that for all practical purposes the soil is infinitely divisible: and that since the roots of plants cannot by possibility occupy every interstice which may exist in a highly comminuted soil, each additional stirring is tantamount to the production of a new internal surface, and a fresh source of food. Then he argues that constant comminution and opening of the soil not only enables the roots of plants to benefit by the stores of food already existing in the soil, but that it at the same time materially increases the stock by letting in the atmosphere loaded with invigorating and healthful supplies. It is obvious that Tull could have had only a faint notion of the changes in the nature of the soil which might be brought about by the influence of the air and we can imagine the pleasure he would have derived from the acquisition of the more exact knowledge which in relation to this point we now possess; but none the less was he convinced that such an influence was exerted, and one of the objects of his method of cultivation was to take full advantage of it. Acting upon these principles, Tull had introduced a system of cultivation of crops planted in rows by the drill, and had earned thereby the gratitude of posterity, which was exhibited in the almost universal adoption of that system. But he had also attempted a method of growing crops which had not been so generally followed. In addition to the provision for stirring the soil between the rows of plants, he had left intervals of varying but very considerable width, between every second or third row, which enabled him at all times of the year to carry out his principle of pulverizing the soil. These intervals were in fact in the position of a naked fallow for the year, and were, in the succeeding season in their turn brought under a crop. Mr. Way did not intend to enlarge upon the practical part of this subject, which many of his hearers understood far better than himself; but he wished, irrespectively of any particular form of accomplishing that end, to impress upon them the great importance and value of a thorough comminution of the soil, both as rendering available its present riches and enabling it to receive from the air whatever beneficial effects the latter was able to produce. Mr. Way read a number of passages from the author's work, commenting upon and explaining them as he proceeded, and concluded his lecture by commending the book to the careful study of all those who had not yet become acquainted with it.

LORD BERNERS had great pleasure in proposing a vote of thanks to Prof. Way for the interesting lecture he had then delivered, which would be useful in pointing out to practical men the causes of their success or failure in particular cases.