

HARDY FRUIT TREES.

During the last winter session our respected friend Prof. Karl Koch gave a course of lectures in Berlin on "German Fruit Trees," which were so well received that he published them. The title "German Fruit Trees" was selected simply because it indicates the kinds of fruit trees coming within the scope of the lectures, that is to say the hardy fruit trees, such as the Apple, Pear, &c. For our purpose we might with equal propriety speak of them as English fruit trees, but for convenience we shall substitute the term hardy. The whole course consisted of twelve lectures, divided into two series, the first being devoted to the history and natural history of hardy fruit trees, and the second to the consideration of the development of fruit growing in Germany, and descriptions of a selection of varieties recommended for general cultivation.

The lectures being to a certain extent of a popular character, much matter is included which may be regarded as common knowledge, and which it would be superfluous to repeat here. Taking them in the order they were delivered, some must be dismissed with a few words, in order to keep within a reasonable space, whilst others call for a more extended notice. The first lecture includes:—Division of fruits according to climate; increase of the storage of nutritious substances in the improvement of the fruit; origin of fruits according to Van Mons' five fundamental maxims; Decaisne's experiments in raising fruit trees from seed; definition of fruit; different kinds of fruit; different kinds of buds; seedlings; varieties of fruits; choice of certain varieties in France, and for importation into Russia; the flourishing fruit tree culture in Belgium, and its causes. Passing over the first paragraphs, the results of Decaisne's experiments are worth noting, as showing the almost unlimited extent to which a plant will vary after it has once departed from the original type. In 1853 Decaisne sowed seeds of three different Pears—Williams' Bon Chrétien, Beurré Bosc, Belle Alliance, and *Pyrus salicifolius*, D. C. After the lapse of ten years several of the seedlings bore fruit, but in no instance did it resemble that of the parent tree, differing often even in the time of ripening. It is scarcely necessary to mention that we may continue to raise seedlings year after year without obtaining any essential deviation from the original parent, but, after the first deviation has been secured, the progeny from that variety is perfectly inconstant, and every succeeding season new varieties appear. The botanical definition of the term fruit is given at some length,

and the fact that the Germans have a special word (*obst*) to designate the edible produce of trees, whether seed, fruit or inflorescence, is opposed to the poverty of the French language. We also are in the same unfortunate position; but we may be consoled because this special word, like our own fruit, includes the lot, and it becomes necessary to distinguish them into *kern-obst*, *stein-obst*, *beeren-obst* and *schalen-obst*, which are no more expressive than pome-fruits, stone-fruits, berry-fruits, and shell-fruits. Coming to the remarks on the selection of varieties the advice they contain is worthy of the notice of all planters. Inferior varieties should be rejected without a thought. To grow a large collection, unless with some ulterior object in view, is to be strongly deprecated. Out of all the numerous varieties grown by nurserymen only very few are planted by those who supply the markets. And although there are doubtless some good varieties which do not find their way into the markets, it is a fact that most of the varieties grown by market gardeners are of excellent quality. The celebrated nurseries at Angers, belonging to André Leroy, form perhaps the most extensive fruit-tree establishment in the world. Of seven of the most generally esteemed varieties of Pear in France, the average annual sale, collectively, is about 140,000 trees, and as many as 20,000 each are often sold of the Williams' Bon Chrétien and Duchess d'Angoulême. The remaining five are Bonne Louise d'Avranches, Beurré Diel, Beurré d'Auremburg, Beurré d'Amaulis, and White Doyenné. The highest number sold of any other varieties, even of the most celebrated, does not exceed 1000 annually. The same holds good in the north of Germany, where Pears are largely grown for the Russian markets. This is no doubt accounted for by the fact that the large mass of people will only purchase old tried sorts. Not forgetting the merits of the French, it is in Belgium that fruit growing has reached the highest stage of perfection; to the inhabitants of this country it is a second nature. This superiority is mainly due to the exertions of the more intelligent and wealthy classes, the highest of whom do not disdain to place themselves at the head of societies for the promotion of horticulture. Further, the Belgian Government encourages and supports horticulture as one of the principal industries of the country. To Professor Pynaert, Burvenich, Rodigas, and Van Hulle, (all eminent pomologists) the principal credit of founding the Cercle d'Arboriculture is due. The Society has only been in existence twelve years, but it has already effected an incalculable amount of good.

The second lecture is devoted to brief

descriptions and historical sketches of the southern fruits.

The third lecture commences with a description of the characters of the pome-fruits, the Pomaceæ, and the three series of pome-fruit trees. To the first series belong the Quince, Medlar, Service, &c. The peculiarity of this series is that the axis is sympodial, that is to say, the buds all along the previous year's twig are alike and develop into shoots, normally terminating in a flower or flowers, and the axis is continued by a replacing bud, which appears below the flowers. In such trees the branches are usually, though not always, crooked, whilst the monopodial, or those in which they lengthen from year to year by the terminal buds, are never flower-buds. The second series includes *Pyrus prunifolia*, one of the ancestors of our Apples, and the allied *P. baccata*, in which the mode of growth is not very different. Here, instead of long, flower-bearing shoots being formed, short ones appear throughout the whole length of the branch, the terminal buds also developing in the same manner. Immediately below this flower a "replacing bud" is formed, which grows out into a long shoot; and when the buds on this shoot in their turn break they bear flowers. Most of the Apple and Pear tribes grow in this way, and those varieties in which it is so usually come into bearing very early; moreover these varieties are preferred for cordons and espaliers, in which forms they produce fruit remarkable for beauty, size, and good flavour. Among Apples, Langton's Incomparable, Golden Winter Pearmain, and White Winter Colville may be mentioned; among Pears, Williams, Bon Chrétien, Louise Bonne Avranches, Beurré Diel, &c. The third series embraces the whole of the remaining Apple and Pear trees. In these the previous year's shoots bear leaf-buds on their upper and middle portions, and mixed buds on the lower parts—that is, some flower-buds and some leaf-buds. The last, being the most important, will be discussed first. The peculiarity in the growth of varieties of this series is of the first importance, and a knowledge of this is a kind of key to the mode of pruning to be practised. In some varieties the lower buds, which develop as short shoots, do not always bear flowers the same year; for instance, in the Gravenstein flowers do not appear for from six to nine years. This will be treated more fully under the head of pruning. The species of true Apples may be divided into the shrubby and arborescent. The former, independently of their habit, differ from the latter in producing suckers, or at least in throwing up a number of shoots from the base of the stems, which may easily be detached with a portion of root. There are three of this