

Economy of the Vegetable Kingdom.

With Lecture Delivered before the University of California College of Agriculture, on Friday, January 29th, by Prof. C. E. Bessey.

(From the Pacific Rural Press.)

Spurge-worts, Laurals and Olives.

The topic to-day is, first, the Spurge-worts, the plants belonging to the order Euphorbiacae. The order is to some extent represented here, so that probably you are somewhat familiar with its characteristics. It is one of the most extensive orders we have, numbering fully three thousand species, distributed in all climates. In the temperate countries they are herbaceous, in many cases very small plants growing to a height of four or five inches. In South and East Africa they have leafless, succulent stems, often rising to the height of trees, being very much in shape like the cactus, while in tropical and South America they become very large trees.

abar coast, and in Java and Cayenne, for the sake of the aromatic bark of its young branches. It is a shrub tree; that is, it is very much inclined to send up a great many reed-like little stems, and they are selected for peeling when they are about three years old, and one-half inch to an inch in size. Workmen go along, run their knives down the sides of the stem, and the whole bark is stripped off. In a day or two the epidermis—corky and green layers—can be removed, so that only the older inner fibers of the bark remain. This takes on a brown color, and is brought to market in the quill-like form in which it is arranged. In selecting, the outer bark is rejected in the true cinnamon. True cinnamon should be of a rich brown color; should be very thin, about as thick as four or five sheets of paper, not much thicker than that, and should be exceedingly fragrant.

Now, allied to this tree from which true cinnamon is obtained, we have two others—C. aromaticum and C. cassia, natives of Ceylon, from which, as well as from the older branches of the species already noticed, casia bark—may be considered as a kind of inferior cinnamon—is obtained. This bark is thicker and has more of a bitterness and a pungency than the true cinnamon. Instead of occurring in long, quill-like pieces, it is in the form of thick chips; as, instead of taking that great pains which they do with true cinnamon, they simply cut and slash away at it in about the same way we would take a drawing-knife and peel off the bark of an ordinary tree. It is used as a substitute for, and also to mix with, the true cinnamon. You go to any of the ordinary shops and call for cinnamon, you will find what is properly called casia bark in it and some places it is found without any cinnamon at all. I have seen many specimens that seemed to be Nothing but Casia Bark.

Whenever you find cinnamon occurring in chip-like masses you may be sure it is not true cinnamon at all, but it is really casia bark. Taking the British statistics, the amount annually consumed in England is some thirty to forty tons true cinnamon and about two hundred tons of this casia bark which might be called false cinnamon. Cassia buds are derived from the last named species.

The camphor tree, Camphora officinarum, belongs to this order; is a native of China and Japan and is now grown very much on the island of Formosa. The wood is of considerable value. It is used in the manufacture of trunks,

here in the city of San Francisco. I find that our manufacturers use it very extensively. They use it along with the Americana which they import from the Eastern States.

The name of the order is derived from the olive, Olea Europaea. It is a native probably of Western Asia. Its name would lead one to suppose it was a native of Europe, but that is not the case. It is, I think, grown to a limited extent in the southern portion of this State, somewhat in the Southern U. S., in the West India islands, but more extensively in the basin of the Mediterranean. From its fruit, which is a small, blue black, cherry-like fruit, is obtained the sweet olive oil. This fruit is gathered ripe, subjected to pressure for the purpose of extracting the oil. The wood of the tree is very hard, of a yellowish white color and is exceedingly durable. It is used in the manufacture of small implements and utensils in very nearly the same way that box-wood is used and can be used for very nearly the same purposes.

Manna, found in the shops, is the product of a species of ash, Fraxinus arnica, found in Southern Europe. Calling for manna at any of the druggists, you will be shown a very pale, waxy material which is the product of Fraxinus arnica. Upon making incisions into the tree the juice exudes and hardens, producing manna.

The order is of some little importance for its ornamental representatives. Of these we need only mention the fringe tree, grown extensively in Quebec; the lilac and the jessamine. Having gone over these three groups, although I have not used up the hour by any means, I perhaps have given you material enough to work up for this time.

Down With High Living!

To be more prosperous on this coast, we need to live more economically and independently. Our rents are too high; our food costs too much; our fuel is too dear.

As Californians, we spend a good deal of money by following early customs rather than good common sense. By a little more independence, and a good deal more co-operation of capital, intelligence and honesty, our people may acquire cheaper and better living.

We want to talk more about this subject hereafter. In the meantime, let our readers compare a certain class of house-rents in Philadelphia with those of San Francisco, by reading the following correspondence to the N. Y. Tribune:

Let us begin with the cheapest class of dwellings. From \$6 to \$12 a month is the rent of a complete house containing everything essential to the comfort and cleanliness of a small family. Such houses are built in long rows, and usually upon narrow streets running between the main thoroughfares. Each has two rooms on the ground-floor and a small kitchen in the back extension. Sometimes the street door opens immediately into the front room; often there is a narrow wall. Up stairs are two bed-rooms, and there is a bath-room over the kitchen, supplied with hot water from the kitchen range. There is a cellar for fuel and provisions, and a small back yard. The houses of this class do not vary materially in size or interior accommodations, and the difference in price between the extreme figures of \$6 and \$12 depends upon the situation, whether central or suburban, and whether upon a regular street or alley. For \$10 may be rented a house of this kind in a respectable neighborhood, not more than twenty minutes by street-car from the State House, a point corresponding as a business centre to the City Hall in New York. These little dwellings are sometimes called "miniature houses." They are, of course, very small, and the upper rooms, under their thin sheet-iron roofs, are uncomfortably hot in summer; but the aid which they give to the poor to lead healthful, virtuous lives, will be appreciated if the condition of a family occupying one of them is contrasted with that of a family paying as much for two or three rooms on the third or fourth floor of a tenement house in New York. One has a home, humble though it may be, and can surround itself with the sweet and wholesome home-influences so important in great cities as safeguards against the temptations to vice, and so essential everywhere to the proper development of character. The other has a shelter from the weather and place in which to eat and sleep, and that is all.



Fig. 1. The Olive Branch.

chest and other things where the fragrance is of some importance, and from the wood is also obtained the camphor that is found in the shops. In order to obtain this, the wood is chopped up, thrown into water and subjected to heat; camphor being volatile, passes over and is condensed. It is then brought to this country and used for medicine. Clothes put into a trunk or chest made of camphor-wood, are almost always preserved from moths, as these insects seem not to like it.

The California laurel, Oreodaphne Californica, is our only representative of this order. It is, possibly, another representative one—a little shrubby one—may be found here. But this, I understand, the only one giving value to the order here. The wood of this laurel is, as you know,

Quite Valuable.

I find that it has not been used as much as it might have been, or as much as it should be. It is considered sufficiently ornamental in England to be used in the gardens there quite considerably, and there they have introduced it under a different name, and I have little doubt but that you will find it before many years brought back from there and sold under that name to our people for a new plant. Of course it will do very well. It will do just as well to use the wild plant, however.

In the United States, east of the Rocky mountains, another tree, the Sassafras, (Sassafras officinalis), is of some importance, as furnishing a very spicy bark which is supposed to be very valuable in medicine; it is used somewhat.

The last family that I call your attention to, is the

Olive Family.

Oleaceae. (see fig. 1). It is smaller than the preceding, numbering but a hundred and fifty species. They are all trees; or, if they are not trees, they are shrubs. We might say they are trees, or shrubs more or less inclined to be tree-like, natives of the temperate, northern hemisphere, and to a limited extent of the southern. The order is of importance, as furnishing us some valuable woods. First or probably most important is the European ash, (Fraxinus Excelsior), a large tree extensively planted in Europe. The wood is used wherever strength, lightness and hardness are desirable. Without any question this could be very profitably introduced into California. It would grow without any doubt, and as we are somewhat short of wood of that character, it would be well to see what could be done by way of introducing it. In the eastern United States, Fraxinus Americana seems to take its place. It is there called white ash, and is somewhat related to the European one. Its wood is equally valuable, and it is largely used for the insides of railroad and street cars. For any use where lightness and toughness are necessary, it is valuable. It is used very largely in the manufacture of useful agricultural implements, and when kept reasonably dry the wood is very durable also. This American species grows somewhat larger than the Excelsior, preferring the rich soils lying midway between the lowlands and uplands, and

Might be Introduced Here with Advantage.

But probably it could not be as well grown as the European, so I would advise the introduction of the Excelsior rather than the Americana. In some parts of California occurs what is called Oregon ash, (F. Oregonica). It is a tree attaining a diameter of from twelve inches upwards, found in Oregon and probably the northern portions of this State. I don't know whether it grows as far south as this or not.

I have seen specimens from a small tree of it, also the curly form which seems to have been taken from a knot or something like that. I could not find any of the straight-grained timber in the collection. This is very largely used

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