Economy of the Vegetable Kingdom.

( ) Lecture Delivered before the University of Cal itorala College of Agriculture, on Monday, February lat, by Paor. C. E. BESSET.

(From the Pacific Rural Press,)

The Nightshade, Star Apple, Tobacco, Etc. The nightshade family, Solanacece, are herbaceous or woody plants; in all about 1,000 species, of these a very few species are found all over the world, but the most of the species are tropical, so that speaking of it generally we must call it a tropical order. Although some when prepared are wholesome, yet the whole family is more or less poisonous and this poison is a narcotic. Several plants, however, are of the greatest value for food and, outside of the order of graminea, I doubt whether there is another single plant which has as much general value as the potato, Solanum tuberosum, a native of the higher regions of South America and also found to a certain extent in Mexico and one verynearlyallied species is found growing in porverynearlyallied species is found growing in por-tions of California. The potato was originally very small, but culture has changed it. In this change, it seems as if the size of the potato was increased, while the amount of poisonous matter in it was not increased, so that it is con-ciderably diffused and probably this is du-largely to culture. It was first introduced into England in 1597, by Sir Walter Raleigh; but for fully a century it was very little esteemed. In fact, only within the last bundred years, it has come into general use. Not only does it furnish food, but it furnishes starch for use in the arts. From it also there is produced, in the arts. From it also there is produced, in some parts of the country, a spiritoous liquor somewhat resembling brandy. I should say, whenever these tubers are exposed to the sun,

Pervaded by This Narcotic Poison; So, of course, it is unbealthful to make use of

them.

The egg plant, Solanum melongena is another South American plant. [Fig. 1.] It bears large egg-shaped fruits which are u-ed in cooking. It has never come into general use. Further, it has so much of this poisonous matter that unless taken at the proper time there is denger in it. danger in it.

The tomato, Lycopersicum esculentum, also

The tomato, Lycopersicum esculentum, also from South America, is now largely grown for ts delictions fruits, though for many years after its introduction it was supposed to be poisonous and was grown only for ornament under the name of love apple. Almost any of the old people will tell you of seeing it grown years ago just for an ornament. Now, in these the poison is still present when they are green, but in ripening the sun seems to eliminate the poison from them. If eaten when they are green they are injurious, unless prepared in vinegar or in some manner so as to remove the unwholesome tendency. [A student. "The green they are injurious, unless prepared in vinegar or in some manner so as to remove the unwholesome tendency. [A student. "The sun seems to have an opposite effect upon them from that it has upon potatoes."] [Professor explained this, saying]—When the sun shines upon a potato, it changes the tober into a stem, and it is therefore poisonous. I suppose if the fruit of the potato when ripe could be eaten we would find little poison in it. As long as the fruit is green there is a great deal of poison in it which can only be dissipated by the sun or the heat of cooking.

Another plant is the ground cherry or cherry tomato. It belongs to the genus Physalis, and is a little, low plant, with yellow, or orange-colored fruit, not unpleasant to the taste, inclosed in the enlarged calyx. It grows in the United States. The winter cherry, Physalis alkakenyi, is a native of Southern Europe; now considerably grown for ornament.

Cayenne pepper is the product of Capsicum annuam, a South Asiatic plant, coming from India, now largely grown in all warm climates. In this case the narcotic matter or poison seems to be changed into this pungent matter found in pepper. What we call Cayenne pepper is the variety which grows large, long pods. These being annuals, of course can be grown very far north, and can also be grown well to the south.

Stramonium, or thorn apple—you see we are

the south.

Stramonium, or thorn apple—you see we are passing from the food plants to the medicinal ones—Patura Stramonium, is a large ill-scented weed, with very large, trumpet-shaped flowers and prickly pods. Its seeds [Fig. 2], contain an alkaline principle considered valuable in medicine. When taken in considerable quantity they produce raving and in excess protound stupor. Stramonium is kept in the shops in considerable quantities. It is said to be one of the ingredients of

#### Drugged Liquors.

When any one is put into a stupor through taking certain liquors, generally stramonium has been used in the liquor. It is, however, used quite considerably in legitimate practice. used quite considerably in legitimate practice. Belladonna is a product which has a better reputation and is derived from the perennial herb, Atropa belladonna, a native of Europe. The whole plant in this case is exceedingly poisonous, and from it we get the drug known as belladonna. Like henbane, which is derived from a nearly allied species, it has the power of dilating the pupil of the eye. If a drop is allowed to fall upon the eye, upon the pupil, it will dilate greatly and it is from this fact it gets its semmon name.

Belladonna is derived from two Italian words a, beautiful and donna, lady; according to

The Spanish and Mexican tadies have long made use of this to try to highten the beauty of their eyes. Our oculists now put it to a better

Tobacco, Nicoliana Tabacum, is a native of the warm portions of America. [Fig. 3.] It was used by the original inhabitants of this conwas used by the original inhabitants of this continent long before the Europeans came here, but it was very soon introduced into Europe. In 1589, Sir Walter Raleigh took the tobacco to England and some eight years afterwards the potato also. At first, it met with great opposition, throughout all Europe; kings, priests, popes, everybody opposed it; nevertheless, its use spread rapidly over all the countries of the civilized world. Some of the authorities say that on an average that on an average

#### Every Fourth Man

Makes use of tobacco. A greater part of the product is derived from the United States. There is a strip of country including Virginia, Ohio, Pennsylvania and running down into New England, also including portions of Tennessee, Indiana, Illinois and southern Iowa—all through that belt of country is a very important district engaged in tobacco growing. Certain varieties are grown very far north. I have known its very profitable cultivation up mear lake Erie. It probably will become of more and more importance.

near lake Erie. It probably will become of more and more importance.

Among the weeds we name black nightshade, which is a remarkable plant botanically, from this fact: that it is found running as far north as a plant will grow, up into the frozen regions; and also in the southern temperate zone, it extends as far as plants will grow. This is an anomalous case, because as a general thing the plants of the north temperate zone are hardly found in the south temperate zone at all. Second, the "jimson weed" or thorn apple. It grows abundantly in almost all cultivated places. It grows in California. Both of these weeds are poisoness.

frequently in our agricultural journals that to-bacco is not an American plant. I think that remark comes from this: there are a great many species of Nicotians, some of which are not natives of America, and I think it is from this we get the statement that the Chinese were acquainted with tobacco long ago. The tobacco largely used all over the world for smoking and chewing is an American plant.

The second order, the Mints

Of the order Labiatece, are herbs or small shrubs, never trees; mostly with square stems, very abundantly distributed, but most abundant in the temperate zone. There are up-

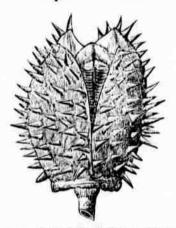


Fig. 1. Seed Pod of Thorn Apple-(Datura Stramonium).

wards of 2500 species, throughout nearly all of which is to be found a bighly aromatic and pungent property which has caused them to be long held in high repute as possessing medicinal virtues. At the present time this medicinal use has nearly passed away, and they are re-stricted almost entirely to a few strong scent-d stricted almost entirely to a few strong scent-d plants which make up the medicines of quacks and herb doctors. In fact, this order furnishes the perfume or odor for the quack medicines more than any other we have. A few, however, are harmless plants, used in domestic practice, and called, generally, herbs. This aromatic principle is of importance as furnishing some very useful oils and essences.

First, is lavender, from the Lavandula vera, which is a little shrubby plant found in South Europe, grown for its leaves; from these by distillation is obtained oil of lavender. This, dissolved in alcohol and mixed with water is what is known as lavender water, and is used

what is known as lavender water, and is used

largely in perfumery,
Rosemary, (Rosemarinus officinalis,) also a
shrubby plant found in Southern Europe, and
to some extent in Western Asia; is grown for
its oil, used in the manufacture of all sorts of perfumes; also very largely used in the manu-



Fig. 2. Egg Plant.

facture of cologne water-is one of the m ore important ingredients in the later.

There are a great many others. I simply will mention a half dozen or more of them in

will mention a half dozen or more of them in testimony of this fact, that the order is an order of perfume. Peppermint, pennyroyal and sage are European; sweet basil is from India; horehound and catnip are European. You can hardly mention a plant of this order but that is more or less aromatic.

Some of less aromatic.

Some of these, as peppermint and pennyroyal, are used in domestic practice. It is my
opinion that they are quite hamless, but as to
their real virtues, I doubt whether they possess
any. If we must take somethic g whenever we
have a little pain, I suppose we might as well
take these. I do not went to put myself on take these. I do not want to put myself on record as again t taking medicine when prescribed by a physici n. If we wish to dose by the natives is suicidal, we cught to be lookourselves, without knowing anything about

their properties, these things may be taken.

A few plants of the order are of ornamental that value. Two are in quite common use—Colcus and Perilla; these are the generic names. They run off into false species or varieties. here, have a brilliant, red color, They grow



Fig. 3. Tobacco Plant.

east, in hot houses; bare, out of deors. Sage,

east, in hot houses; bare, out of deors. Sage, an Indian species, and some tropical, are grown for ornamental purposes. When these three are mentioned, you have about all. It seems a little strange that an order of so many species should not furnish more, more valuable for ornament. None furnish food for man or beast, though a few are used as substitutes for tea, very poor at that. None furnish textile materials or materials which can be used in any way in building—no woods.

There are but few bad weeds. I do not call to mind a single one but that can be readily driven out. As soon as you use the plow or hoe they disappear. It is possible that in some localities there are some of more weedy habits. The group may be considered as yielding medicines of a poor order, and perfumes of a high order; and it illustrates perfectly how one predominant character may determine the position of an order or group in the list of economic mants. The aromatic propagate which it pos-

of an order or group in the list of economic plants. The aromatic property which it possesses determines its position.

Next we take up several small groups of but few species, but of considerable importance, and first is the

as you will expect from the nature of the wood. In the largest, the wood is of a light color, but after a while it begins to turn dark, and takes on the very dark, almost black, color to which it has given a name. This is labeled here as a true cbony. I have some very grave doubts whether it is, but then it will show you, however, what cbony is—its general appearance. I think if a bit of that specimen was taken out and boiled in water a coloring matter might come out. It is probably white-wood stained and

#### Sold as True Ebony.

The true ebony should not have the appearance which you will see if you hold it up to the light in the proper way. True ebony blackens in the center, and from the center outward. It is, therefore, difficult to account for any such whiti-hness on the inside. Then sgain, it is not hard enough. True ebony should be jet black, considerably hard and quite brittle. The best is that coming from Mauritius. Ceylon and Iodia are not so valuable.

There are a few allied species which furnish

and India are not so valuable.

There are a few allied species which furnish some woods of a good deal of value in certain localities, but so far, their values are only local. In China and Japan, one of the species of this same genus Diospyros, furnishes a very valuable and very delicious finit. It is called there the Kaki, or Chinese date (Diospyros Kaki), and so in giving it a name, botanists very wis ly gave it the same specific name which it has for a common name. You understand that it is not the date spoken of in literature generally; but this is a fruit about the size of an apple, said to be exceedingly delicious. It is eaten said to be exce dingly delicious. It is eaten from the tree and also p everved—makes a sort of fig-like preserve. Can be

Grown in Southern California. If not already introduced, it could very profitably be brought into the United States.

In the eastern Unit d States and running up, I hardly know how far, into the Rocky Mountains, we have what may be called the American date, or the American date palm.

It is known in the East and, probably all

over the country, as the Persimmon, Diospyros Virginiana; the American date palm, or Persimmon, is a tree growing from twenty to sixty feet high. It produces a plum-like fruit, which, A liprogen, is exect and ean, that this closely allied the same Person, it is sweet and ean, that this closely allied the hard a very delicitous fruit, and a hot, it is very likely that this same Person, it is very likely that this same Person, it is very likely that this same Person and the same person and is not worth thinking much of. It abounds through almost all of what might be called the interior States, including Ohio, Indiana, Illinois and southward. There are some in the extreme southern partion of flowa. I think there is no part of Southern California as cold as Southern Iowa. However, as this Kaki could be grown in the southern part of California, there is no need of introducing it, the Person mon, three. Taking it wild, we lot course, expect it to be a poor thing; but grow it, selecting the best varieties wherever it sports, and no doubt in a v-ry short time we might get from it valuable fruit.

Foreign Patents.

In addition to American Patents, we secures with the assistance of co-operative agents, claims in all foreign countries which grant Patents, including Great Britain, France, Belgium, Prussia, Austri, Victoria, Person, Water Deligium, Pruss when green, is exceedingly pungent. When ripe it is sweet and edible. Now, from the fact that this closely allied species produces such a very delicious fruit, and a hardy one too, it is very likely that this same Persimmen.

They cut the trees and peel off the bark and by so doing obtain the juice, but this results in rapid destruction of forests. As the juice dries, it is made up into little cakes and is exported. When brought to the Un ted States, or England, or any of the countries on the continent, it is manufactured into all sorts of utensils and is applied to a great variety of these. As the trees applied to a great variety of uses. As the trees only produce from twenty to thirty pounds spiece and as the consumption requires a very large quantity annually, there is great danger that it will become extinct. No steps have been taken, except by the British government ing out for something to take its place. Its uses are very many. One peculiarity it has, is, that when heat d it softens up and can be monided into various forms and when it cools becomes hard and retains its form; so it can be v-ry largely used for any purposes required. Then again, it is used for the telegraph cables Very likely, if gu ta percha had not been found

Should Not Have Had Atlantic Cables. At least, for some time yet. In order to pre-vent the great waste resu ting from the present method, the trees could be tapped or partially girdled and their juice thus utilized for six. seven or eight successive years. This method, though not giving so large immediate results as cutting down the trees, would give a larger

aggregate.

Now, Europeans pay no attention how the natives get the material together at the seaports. In some species, this milk is used for food by the nat.v.s. I suppose in such species the juice does not coagulate or dry up as soon, and in some cases the juice is used just as the natives of South America use that of the cow tree, and as the Pacific islanders have always used that same tree.

used that same tree.

The star apple and the sappodilla plum, of the West Indies, are large trees bearing delicious fruits about the size of an apple, which are said to be second only to oranges. Here, we know nothing at all about them. In fact I never saw a star apple or sappodilla plum. They are difficult of transportation. They could be grown, almost to a certainty, in cer-tain parts of this State. A few species furnish valuable woods, but they are not of general im-portance as yet, being known only in certain restricted districts, so we pass them by.

The last family to which I call your atten-tion, is the

tion, is the

Holly Family, Or, the Aquifoliacee, a small group numbering about one hundred species, all of which are trees or shrubs. They are found in temperate trees or shrubs. They are found in temperate climates some as you use the plow or hos isappear. It is possible that in some loss there are some of more weedy habits, roup may be considered as yielding medof a poor order, and perfumes of a high and it illustrates perfectly how one present character may determine the position order or group in the list of economic. The aromatic property which it possible the position.

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Among the flowering plants only one is worth mentioning, and that is petunia. This, within the last six or seven years has been considerably improved, although a few years ago it was called old fashioned. Its ease of growth and delight ul fragrance place it very deservedly quite high among the ornamental plants.

Referring again to tobacco, I just want to make one remark: You will find, the statement frequently in our agricultural journals that toyou will see that the color is not all the way through it.

ihrough it.

Paraguay tea or "mate" is derived from another apecies of this Ilex, I. Paraguayensis, a little sbrubby plant. The leaves are gathered, accrebed, pounded and then used very much as Chinese or Japanese tea, and it is said to possess about the same properties. By the way, this name "mate" is a misnomer, and it comes by travelers mistaking the name of the vessel from which the tea is taken for the name of the tea itself. The inhabitants drank this tea from a little vessel called the mate [ma-ta] and a drank this tea from a little vessel called the mate [ma-ta] and the little vessel called the little vessel cal so it was supposed when they were drinking it and used the word, they were referring to the beverage; at least, so some authorities tell us.

BENJ. Franklin said: "The eyes of other people are the eyes that ruin us. If all but myself were blind, I should neither want a fine house nor fine furniture."

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