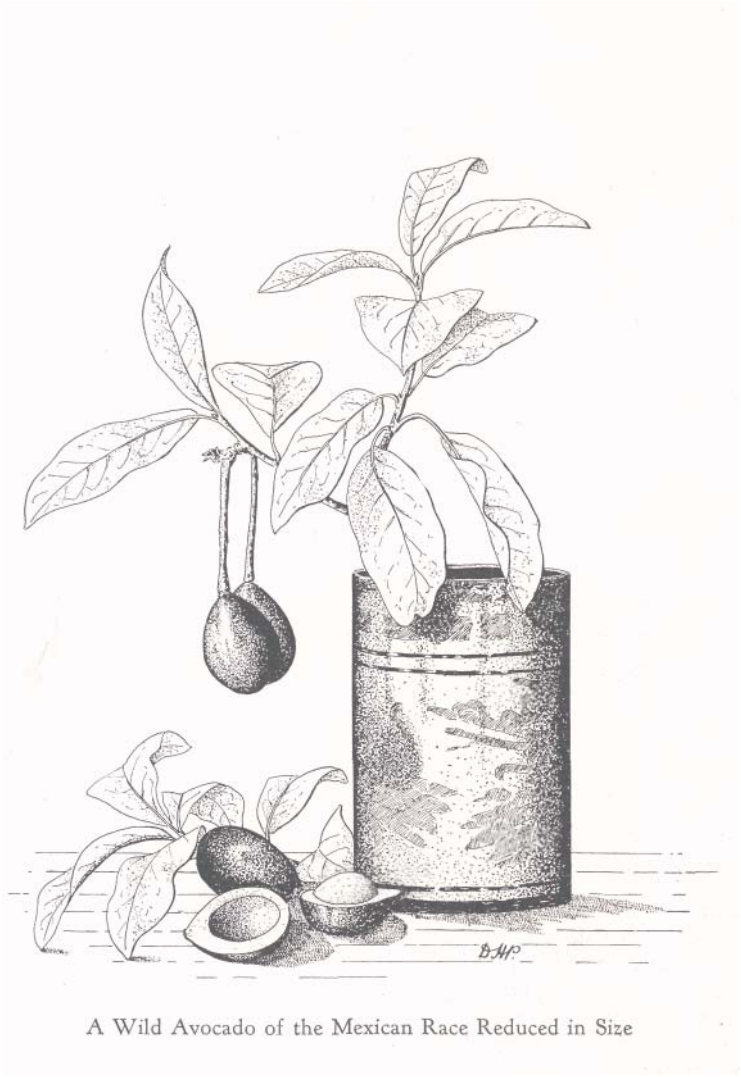

A Wild Avocado of the Mexican Race Reduced in Size

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Wild Avocado

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Since the first days of avocado growing in California, those interested in the future of the industry have insisted that it be built upon sound foundations. To this end, tropical America was explored for avocados, first by private initiative, later by the U. S. Department of Agriculture. An extensive series of varieties secured by these explorations is now available. Some of these, such as Fuerte, seem destined to be grown commercially on a large scale; others, much more numerous, will find their chief usefulness in supplying superior breeding stock, from which horticulturists will derive

new forms, better adapted to local needs and conditions than most of those which have been introduced from abroad.

Co-existent with the search for superior varieties in tropical America, a hunt for wild avocados was carried out by the U. S. Department of Agriculture. This brought to light a number of interesting types, among which should be mentioned the coyo or shucte of Guatemala *(Persea schiedeana);* primitive forms of the Mexican avocado, which have all the appearance of a true wild species; an avocado-like fruit, the anay of Guatemala *(Hufelandia anay);* and finally, the wild avocado of Costa Rica. This latter was first called to the attention of California horticulturists in the Report for 1920-21 of the California Avocado Association. On page 78 of this report, in a communication which I sent from Ecuador, occurs the following paragraph:

"The incident of outstanding interest during the course of the explorations in Costa Rica was the discovery, by Oton Jimenez and myself, of a wild avocado on the slopes of the volcano Irazu. We found it in fruit, but not in flower; hence we have not yet been able to complete the botanical study of the' species. But basing my opinion upon the character of the tree and its fruit, I am inclined to believe that we have at last fallen upon the true wild avocado, the prototype of the cultivated Guatemalan race and probably also of the West Indian."

Later, in 1923, a description of the tree and its fruit was published in Inventory No. 63, of the Office of Foreign Seed and Plant Introduction, Bureau of Plant Industry, under S. P. I. No. 50585. Illustrations of the tree and its fruit appeared in the succeeding Inventory, No. 64 (Plates V and VI). Budwood which had been sent to Washington from Costa Rica failed to survive the voyage, but a number of plants were grown from seeds collected, and these plants were later employed, in the greenhouses at Washington, for preliminary experiments made with a view to testing the value of the wild avocado as a stock-plant on which to graft cultivated sorts. The meager results obtainable with the small amount of material available showed little promise.

The next step was to determine the botanical identity of this plant. Abundant herbarium material collected by Oton Jimenez was sent to Washington, where it was submitted to Dr. Sidney F. Blake of the Bureau of Plant Industry. Dr. Blake was familiar with the botany of the cultivated avocados, through having examined a large amount of material collected during the course of our explorations in tropical America, as well as many specimens from California and Florida. He reported that the wild avocado of Costa Rica was botanically not distinguishable from the cultivated forms which are grouped together under the name *(Persea americana,* Miller) *(Persea gratissima* Gaertner). Here the matter has remained: the wild avocado shows no botanical differences from the cultivated sorts, and there seems to be no obstacle in the way of considering it representative of the wild species from which some of our cultivated avocados have been derived.

I say *some* of our cultivated avocados, because it is not easy to see how the Mexican thin-skinned sorts could have come from this hard-shelled wild form, though the possibility of such a development may have to be admitted. But in Mexico, and to a lesser extent in Guatemala, there are wild forms identical with the thin-skinned varieties of the Mexican race which we grow in our orchards, except in the size of the fruit, which

is smaller. Recently Dr. C. A. Purpus, writing from Huatusco, on the slopes of .the volcano Orizaba in the state of Vera Cruz, has expressed the opinion that these wild forms are truly indigenous, and not escaped from cultivation. While the matter requires further investigation, it seems highly probable that the Mexican avocado will be found occurring as a true wild species, which means that we have two wild avocados to consider, — the thin-skinned Mexican and the hard-shelled Costa Rican.

Based upon an extensive series of herbarium specimens, representing avocados of the Mexican race from many sources, Dr. Blake expressed the opinion that they were not specifically distinct from the West Indian and Guatemalan. He considered them to form a botanical variety, *Persea americana drymifolia.* Later, we submitted the same specimens to Dr. Alfred Rehder of the Arnold Arboretum, and he concurred in Dr. Blake's classification.

What, you may ask, is the use of all this effort to find and classify wild avocados, if they are too small and primitive in character to be worth eating? The use, in the first place, (I will be frank) is to satisfy an insistent desire which some of us have long had, to follow the history of the avocado right back to the beginnings of things; and in the second place (and this, I hope, will prove more acceptable to the practical-minded horticulturist) it has seemed possible that some of the primitive types might be valuable as stock-plants.

The probable value of wild types as stock-plants rests upon the possibility that they may be more vigorous and disease-resistant than cultivated forms; and that they will be more uniform in character than seedlings of cultivated varieties, which are of mixed genetic origin.

In 1920, after finding the wild avocado in Costa Rica, I visited Colombia, and there tried to ascertain whether it ranged that far south. Several reports of a round, hard-shelled, anise-scented avocado came to me, but none of them could be verified. However, some of these reports were more definite than the usual accounts of fine avocados which met my inquiries, and I left Columbia with the feeling that, given time to hunt for it, the wild avocado could probably be found in the mountains along the upper Magdalena river, not far from Bogota.

After this voyage of agricultural exploration, I had no further opportunity to hunt avocados until I came to Honduras in 1925. Here I immediately began to receive reports of wild forms which were not of the Mexican type, but which, from the descriptions given, sounded like the Costa Rican form. Later, fruits were obtained and the trees - examined, with the result that there seems to be no difference between the type found here and that of Costa Rica. The range of this tree, therefore, may likely cover most of Central America.

The striking thing about the Honduranean form is its occurrence at low elevations. Jimenez and myself observed-.the wild avocado in Costa Rica only between 4,500 and 5,000 feet; it may be found much lower, but we have no evidence to that effect. In Honduras, native huntsmen familiar with the woods have shown me three trees within a mile of Lancetilla Experiment Station, at elevations ranging from approximately 800 to 1,800 feet. One of these trees is conveniently situated on the trail which we have built to a camp in the hills where we occasionally go to shoot wild turkey and partridge; it is now

possible, therefore, to show interested visitors an indigenous avocado tree within an hour's walk of our headquarters. Professor Hodgson of Berkeley, on his recent visit to Tela, examined this tree and familiarized himself with the conditions of soil and topography which are native to the species.

The presence of an avocado in which are combined the anise-scent of the Mexican race with the hard shell of the Guatemalan may seem a bit confusing, horticulturally, for these are precisely the characters which we have relied upon for our horticultural classification. In the wild form as seen both in Costa Rica and Honduras, the odor of anise is very pronounced, and is found in the bark, the leaves and the fruit.

As to the fruit itself, it scarcely differs in appearance from a small, round Guatemalan. It might pass for Kanola, except in color. All specimens which we have examined up to the present have been dark moss green. It will be interesting to see if the purple color, so common in cultivated varieties, ever appears among the wild fruits. The surface is pebbled, sometimes slightly rough; the skin is very thick and woody, harder, in fact, than I have ever seen it on a cultivated variety of the Guatemalan race. In size, the fruits vary from two to three and a half inches in diameter>, in form round to oblate. The flesh is grayish yellow to cream colored, gritty in texture, and not very abundant, due to the large size of the spherical seed. An analysis made at the Chemical Laboratory of the Tela Railroad Company showed the flesh to contain approximately 15 per cent of fat. The flavor is strong, not pleasant, and the fruit is scarcely considered eatable.

Wherever we have observed the wild avocado tree, here in Honduras, it has been growing on fairly steep, well-drained slopes. While in Costa Rica we found it mainly along small water-courses, and never in dense forest, here it grows in thick tropical jungles. The soils are mostly clays, overlaid with a foot or two of rich humus. The rainfall in this region varies from 60 to 100 inches per annum.

At Lancetilla Experiment Station we are starting some tests of this wild avocado as a stock for cultivated sorts. Young seedlings have been grafted to the following varieties: Fuerte, Nimlioh, Pollock and Linda. Of these, Fuerte, Pollock and Nimlioh are making satisfactory growth, while Linda is developing poorly. The method of propagation which we use here is that known as "seed-grafting" in Florida, a simple cleft made on a very young seedling. Our horticulturist, A. F. Butler, has found this more satisfactory than shield-budding, and more economical.

When the complete story of the avocado is at last written, the history of wild avocados, their distribution, their botanical characteristics, and their practical value, will form an important chapter. But much remains to be done before we will have at hand the materials on which to base this discussion. It is only within the last few years that the existence of indigenous forms in Central America has been brought to the attention of horticulturists. We must continue this work; we must find out how widely they occur, what differences there are among the wild forms, and how they can be utilized in connection with commercial avocado culture. It is a bit of pioneering which may not be spectacular, but which will prove vastly interesting to real lovers of the "Salad Fruit of the Tropics".

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