

CHAPTER IX

THE CANDLENUT TREE

The genus to which this tree belongs is *Aleurites*, meaning mealy, since the leaves of a good, healthy candlenut tree have the appearance of having been sprinkled with meal. Whether this tree requires very well drained land I cannot say, but I have seen it growing with great vigor in land with the water-table very close to the surface by the side of our cherished live-oak. I do not refer to *Aleurites fordii*, the tung-oil, so extensively planted in Northern Florida and on the Gulf Coast. The original tung was planted in 1906 near Tallahassee from seed furnished by the United States Department of Agriculture. This tree is now surrounded by an iron fence and will in time become famous as the progenitor of what may become a very big industry in this country. The tree is not large for such an age. Our candlenut would reach the same size in one-fifth the time. The tung-oil tree is really a Northern tree in its habit of growth. It sheds its leaves in winter followed by showy flowers. It has a periodicity of growth and is very unlike the candlenut in many respects. The tung-su grows along the Yanste River in China and has never been cultivated except in a primitive way. The *Aleurites cordata* of Japan is said to produce an inferior oil and in small quantities, but I am inclined to doubt this since the Japanese rarely ever have second place in matters of this kind.

Our candlenut is widely scattered throughout the Tropics, is strictly tropical and is not rated of great commercial importance. I have no doubt but that a lot of candlenut oil gets to be tung-oil by the time it

reaches our ports. They say 90 per cent of China's export is obtained from *Aleurites fordii*. The tung does better in North Florida than any other species because its home is latitude 30°. Much of the oil imported in the past has been so dirty and impure that its source might easily be questioned.

The bulk of all the quick-growing, luxuriant trees of the genus *aleurites* growing in the Tropics are of the species *molucanna* or the common Tropical candlenut. The other kinds might be successfully cultivated in highland districts in the Torrid Zone. Northern growers are not, therefore, interested in the candlenut because it is frost tender. They say that it has not been adapted to commercial use. It has, however, been imported into this country for many years and for many purposes under various names. It has been extracted in a crude way by the natives of the South Seas for centuries. It was shipped to San Francisco many years ago from Hawaii and the Hawaiian Agricultural Experiment Station analyzed it long ago. They prepared a bulletin on the subject and pronounced it better than the best grade of linseed oil and not quite so good for various purposes as the Chinese tung oil. That in itself is a great recommendation. Tung oil is now used for so many purposes that there are no doubt many uses which the candlenut product could fill just as well if not better than the true tung. There is great variability in the tung-oil you buy anyway.

The difference in value between tung-oil and candle-nut is really more than offset by the quick and constant growth and productivity of the tropical candlenut. The uses to which these oils are put are varied and ever-increasing. They are even used for water-proofing wood and masonry. The one great superior quality, which is water-proofing, is common to both. It is used for boat paint, water-proofing cloth and paper, calking seams in boats, water-proofing raincoats, bath curtains, etc., etc.; in fact replacing

rubber in many cases. South China is tropical and no doubt yields large quantities of candlenut oil, a lot of which has been used at home for ages past in outfitting their clumsy junks.

One of its common names is **artist's Oil**. It was used in the manufacture of **megilp**, a substance used to renovate old canvases. There is nothing new about it. It is one of the oldest industries on earth. The natives would string the nuts on the midrib of a cocopalms frond. If dry they would burn like a candle and serve for a measure of time. A good deal of the tung-oil talk is propaganda. We have been slow in grasping the possibilities of this genus. We are just awakening to the possibilities of our land and climate anyway, but it was all well known to the Orientals and South Sea Islanders long before Florida was discovered.

Botanists and chemists are very busy, but such old-time Chinese industries such as tung, ramie, and storax were going strong before botany or chemistry were developed.

The candlenut has been growing in South Florida for at least fifty years. They have been common in the West Indies for a much longer time. It seems to me foolish to plant these trees in orchard formation or to bud and graft the same as fruit trees. The candlenut is a forest tree and should be treated as such. Cultivating the already loose soil, tearing and breaking the surface feed roots, fertilizing with artificial mixtures and in other ways messing with these trees will add enormously to the expense without permanent returns. We are never content to pursue a middle course. We either do nothing or everything. This is the kind of a crop that does not warrant expensive land and expensive culture. Cheap land should be planted close with these trees so that a canopy forms early to protect the soil. There should be an underwood of such legumnious arborets as *Pithecolobium guadelupense* or **black-bead** which will enrich the sur-

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face soil and force the height growth of the larger trees. In close formation they will shelter and protect each other. By careful thinning the proper forest conditions may be constantly maintained and the soil will not degenerate in quality. Hoes and harrows would never be needed and productivity would be lasting and perpetual. The more natural the conditions under which these trees are grown the surer the returns, the less the expense and the longer the life of the forest. An area of land of almost any kind which is not too wet planted thick with little trees raised from seed locally gathered and tested for oil and then gradually thinned as they grow older so that a constant canopy is maintained would yield if properly managed a very good return but not fabulous riches. When I refer to land I mean land, since there are vast areas in the Southern United States classified as real estate which are actually flooded throughout the major portion of the year. Some of it resolves itself into nothing more than riparian rightage, which is merely the first claim on what lies between high and low-water mark.

An interesting bulletin on candlenut oil was published by the Hawaiian Agricultural Experiment Station in 1913. This oil has been known as kukui-oil, eboe-oil, belgaum-oil, artist's oil, etc. They estimate eighty mature trees to the acre, two hundred pounds of nuts per tree or eight tons of nuts to the acre. The product of *Aleurites fordii* has a specific gravity of .94 and dries more quickly than any other known oil. Candlenut oil stands between this oil and linseed. The whole candlenut contains about twenty per cent oil. Ordinarily candlenut oil will dry four hours sooner than linseed oil. The oil is pressed out of the ground nuts, hull and all, and the refuse is excellent for a fertilizer. The seeds in the green nuts are eaten when roasted but the spurge family to which this tree belongs contains too many semi-poisonous things such as sand-box, castor-bean and physic-nut

to ever be popular with those who from experience may be rightfully suspicious.

I would plant the candlenut rather than other species of *Aleurites* because it grows with great luxuriance in South Florida, is a heavy seed-bearer, grows well on all kinds of soils, and is not essentially different in its oil quality from other species. I would collect seeds locally and plant only seeds from very healthy heavily bearing trees. I would test this seed for oil content and quality before using it. I would grow them as a forest crop. I would forget the grove and orchard idea and plant them in tropical forest formation because it is a tropical forest tree. There is no reason why this industry should not extend throughout the American tropics.

There may be some land in South Florida which cannot be used for trees. The drainage of some of the wettest of it would probably ruin a large area surrounding it by lowering the watertable. Even in marl lands ordinarily fruitful, many acres have been ruined by lowering the watertable. Underneath the marl there may be a layer of coarse white sand. When the watertable is lowered below the sand the capillarity from below is interrupted. Lands which are too wet for trees and apparently hopeless may be used for the home of wild animals such as the otter which yields a valuable pelt and furnished plenty of spending money to the Seminole years ago. The same applies to the alligator. In Louisiana they are planting wild sedge to furnish food for muskrats. The rental of school lands for this purpose helps to pay the school teachers. If properly treated from an ecological and economic standpoint according to the rules of land-use economics, the so-called wild, wierd Everglades will in time gradually dwindle in size. When you see it from the air it does not look so formidable, and the faint silver threads when visible at all are the great engineering works on which somebody has spilled millions. Whether muck, marl, rock or sand

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we should use to better advantage the lands we already have. The best way to do it is to plant it to trees that will either yield food for our people or raw materials for industry. In this line I can see nothing more hopeful than the candlenut-tree.

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