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CHAPTER II.

SOUTHERN FLORIDA.

NOTES ON THE FOREST CONDITIONS OF THE SOUTHERNMOST PART
OF THIS REMARKABLE PENINSULA.



ACCORDING to the report of the Biological Survey of the United States Department of Agriculture, there are three regions in the United States which belong to the Tropical Zone. One is in Southern Texas close to the mouth of the Rio Grande, another is along the Colorado River in Arizona and California, and the other in Southern Florida.

The first two are hot and arid, the other is humid and pleasant throughout the major portion of the year. The southernmost part of Florida can rightfully claim, therefore, the distinction of being the only humid or truly tropical part of the mainland of the United States—the only tropical part of this country which can be reached by rail. Early geographers arbitrarily made the frigid zones and torrid zone the same number of degrees and then divided the balance of degrees left over between the two temperate zones. The lines called the tropics of Capricorn and Cancer, although of course perfectly straight on the map, are really very crooked and very difficult to definitely locate. Some claim that the frost line is the limit; if this be so no part of Florida is in the tropics, since frost has occurred, in spots at least, throughout the whole peninsula. The best guide is the character of the vegetation, and wherever the coco palm, avocado, mango, pineapple, and hundreds of other strictly or characteristically tropical plants flourish and fruit without protection, the region is truly tropical.

The territory referred to in this article is unique in another

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respect. It is the only region of coral formation in the United States. These two peculiarities combine to render it a region of extreme interest to foresters and botanists. Here is field for research for many years to come, where many phases of plant ecology may be studied to better advantage than elsewhere on the continent. One can pass through all the climatic zones from the boreal to the tropical in going from the region of the proposed Appalachian Park to Biscayne Bay in a little more than twenty-four hours. Were the roads all good, it would be little more than a pleasant automobile trip.

The part of Florida to which this article refers lies between the Everglades and the Florida Strait, and includes the territory around Miami, and southward to Cape Sable, including many coral keys, mangrove islands, and wooded islands in the Everglades.

The vegetation of this district from a forestry standpoint may be divided into three distinct types—the hammock, the pineland, and the mangrove swamp. It is, of course, impossible in so short a space to give more than a superficial description of these types.

The hammock is undoubtedly the climax forest. It represents the type that the rest would in time become were it not for fire, flood and other detrimental and retarding influences.

The hammock is a tropical jungle, consisting of species of trees characteristic of the Antillean Flora. Most of these species produce a vigorous coppice, and the ground is covered with a rich black mold resulting from the leaves and detritus of these hardwoods. It is in the hammock where one finds mastic, crabwood, satin-leaf, gumbo-limbo, princewood, whitewood, manchineel, and many other rare and in many instances valuable woods.

This hammock may be found in patches in the pineland, on islands in the Everglades, and on the keys north of Bahia Honda. Strange to say, the southernmost keys are like the pineland of the mainland in character. Sand Key, seven miles to the southwest of Key West, is the southernmost point in the United States. Although all the keys north of Bahia Honda were once

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covered with a dense tropical growth, much of it has been cut for pineapple clearings. In many places, especially on Key Largo, it is still in virgin condition. Wherever these keys are above tidewater, the growth is hammock; when subject to overflow, it is mangrove swamp. Some keys are all hammock; others are all mangrove, and others have hammock centers fringed with mangrove.

For half a century the timber on these keys has been cut, allowed to dry, and is then burnt. In the ashes a fine crop is produced, and fertilizers have never been used. The fact that pineapple patches are very combustible has caused these natives to burn cautiously. In referring to the vegetation of these keys, I cannot refrain from quoting the following from an article by the botanist Curtiss in "Garden and Forest," volume I, page 279:

"A person who is acquainted only with the vegetation of more northern states, or with that of Northern Florida in traversing these keys, will find scarcely a tree or herb identical with, or even resembling those with which he has been acquainted. He may hear familiar names in use by the inhabitants, such as cherry and cedar, but on examination he will find the species thus designated to be entirely different from those which he has known by such names before. The curiosity is piqued at every step by some unfamiliar and interesting form of vegetation, and if the tourist be accompanied by one of the inhabitants he will learn much of the popular lore regarding names and uses, for these people are remarkably intelligent in regard to the vegetable and animal life of the region they inhabit. It will be found that almost all the adult inhabitants come from the Bahamas, that nearly all the trees and other plants are common to those islands, and, in short, that these islands have much more in common with the Lesser Antilles than with the Florida mainland.

"A tour of the Florida Keys reveals nature and society under such peculiar conditions that any one who has never visited this insular region may rest assured that there remains in store for him at least one source of novel and enjoyable experience, though he may have traversed the mainland of the United States from Maine to California. As regards conformation and

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soil, the inhabitants and their pursuits, the surrounding waters and the marine life they support, these coral islands differ essentially from all other portions of our vast country; but in no particular do they present so striking a dissimilarity as in the vegetation which covers them."

In spite of the mosquitoes these keys are charming places, especially Elliott's, which is bounded on one side by the waters of Biscayne Bay and on the other by the straits of Florida. They are protected from storms by a chain of coral reefs. Near at hand are the famous Sea Gardens.

The pineland, although less rich and luxuriant in growth, is also peculiarly interesting. The rocky ridges or reefs, with sandy swales in between, are covered with pine and palmetto. The pine, strange to say, seems to shun the sandy swales. The sand of these swales is underlain usually with a reddish calcareous clay, resulting from the disintegration of the coral rock. This rock may be found in all stages of disintegration. In the swales the palmetto is most luxuriant, and no doubt the absence of the pines in these places is due to this fact. The regeneration of these pines, in spite of fire and rock, is generally good. The pines grow right on the rock, the roots penetrate its crevices, and the tree is anchored to such extent that when it upturns the rock sometimes upturns with it.

On the keys the soil is crumbled coral, and coral sand. On the mainland it is a limestone as soft in places as chalk and as hard in others as flint. In places it seems stratified or in plates and lifts out in good flat building stones, which harden on exposure; in others it is jagged, honeycombed, and filled with pot-holes and pockets; in others it is coquina-like in character, and in others has an oölitic structure.

The pine is Cuban pine (*Pinus Elliottii*). It does not yield resin satisfactorily, and is therefore not tapped. The wood is often so heavy that it sinks in water, and on the whole is one of the meanest woods on earth to work with. The heart or light wood is durable, but it warps to such extent and is so hard when dry that it is cut, hauled to the mill, sawed into boards, and used for constructive purposes just as soon as possible.

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It is almost impossible to drive a nail into the dry wood without splitting it, and in order to saw it one must flood the tools with kerosene to prevent gumming. Mechanics shun it, although many people use it because of its cheapness. The sapwood soon rots and leaves a heavy, durable heart, which is in great demand for posts, ties, poles and fuel. Much of it is used in burning the coral rock into lime, and much of it is burnt up in the clearing simply to get rid of it. The "log-rolling" stage is still on in this district. In many cases it is blasted down with dynamite and then burnt; in others it is "deadened" and then burnt standing. It would probably pay to distill this wood, since it could be secured cheaply and would yield large quantities of tar.

Fire sweeps over these pine regions frequently. The pine needles, grass and palmettoes burn like tinder. The dry pine bark and rotten sapwood hold fire like punk. Fire gets down in the crevices of the rock, so that it is next to impossible to extinguish it. The effect of fire on this rock is peculiar. It becomes a potent geological agent. It converts the rock into lime, which slakes when wet by rain or dew. In burning piles of brush, rocks are often thrown into the heap to check the flames or prevent the wind from blowing sparks. These rocks are burnt with the wood and crumble into soil.

This rock crumbles into soil in the presence of decomposing organic matter. By the use of velvet beans, dynamite, and hard grubbing by Bahaman darkies, the roughest, most hopeless looking rock-bed may be converted into productive soil.

There ought to be considerable nitrogen present in this soil, since the ground is often covered with thirty or more species of creeping legumes. There must be potash somewhere, since the palmetto ash is extremely rich. Few things will grow, however, in this rock without the help of fertilizer. Plant-food materials may be there, but they are not available. The rock is usually wet, even in the driest times. In fact, under the limestone ridge there are channels of water running from the Everglades and bubbling out in the form of springs along the shores of Biscayne Bay.

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All this pineland would in time become hammock, no doubt, were it not for forest fires. One can find all stages between the true hammock type and the pineland. Where pineland has been protected from fire, it becomes hammock-like in character.

The type of forest called mangrove consists in places of pure red mangrove, the great land-former, but gradually merges into forest similar to hammock. The vegetation of the mangrove swamp consists of those species which can stand a salt-water bath occasionally. They are located on mud lands which are being gradually wrested from the sea. The red mangrove is chief among those plants which can thrive in salt water. With it, however, are often associated the coco palm, the seeds of which float in, become covered with wet seaweed, and then sprout and grow together with buttonwood, black mangrove, sea grape, and others. There are hundreds of thousands of acres of land in which mangrove predominates. Fringing these mud lands are often sand beaches. In the course of time, when this land becomes high and dry by the continued deposit of vegetable detritus, other trees, such as grow in the hammock, gain a foothold and spread.

Back of the rock ridge, which stretches along the coast from the region of Miami southward, is that vast territory called the Everglades. The extension of tree growth on the Everglades has been restrained by an excess of fresh water. With drainage the hammock islands will quickly extend. A very large proportion of the tropical hammock trees of South Florida are berry producers. Such seeds are quickly disseminated by birds and other animals. In the Everglades there are hammock islands, on some of which the Seminole Indians live. This Everglade region, it is claimed, contains 3,760,000 acres. Since ten acres or less is sufficient for the support of a family in this climate, there is room for 376,000 families. The whole cultivated area of Florida is estimated at 1,000,000 acres. It is interesting to compare the size of this wild territory with other parts of the world. For instance, the Everglades cover 5,875 square miles; Porto Rico, 3,550 square miles; Rhode Island, 1,250 square miles; Delaware, 2,050 square miles; Jamaica, 4,207 square miles.

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When this area is once properly reclaimed there will be little of it which can not be cultivated. The complete drainage of these Everglades is not only being seriously considered, but is actually in progress. The following on the "Drainage of the Everglades" is from a recent issue of *Success*, by J. E. Ingraham, one of the vice-presidents of the Florida East Coast Railroad:

"There are great agricultural possibilities in the Florida Everglades. Though they are yet merely an expansive waste of swamp and lake and jungle, I venture to predict that they will be the location of hundreds of fertile farms within ten years, and will by degrees develop into one of the most productive tracts of land in the world. The barrier to the utilization of the Everglades has been, of course, the water which covers the greater part of them to a depth of from one to six feet; but it has been found entirely practicable to drain off the water. Work to this end has already been begun and is being pushed rapidly. When it is completed a tract of land one hundred and sixty miles long and sixty wide will have been opened to cultivation. The size of this region is not as important as the remarkable productivity of the soil. The latter is not only absolutely virgin, but has been fertilized by animal and vegetable life through many centuries. I am confident that its crops will lift Florida to a place among the leading agricultural states.

"The project of draining the Everglades attracted the attention of Henry B. Plant in the early nineties, but he was by no means sure that the scheme was feasible, so I, acting under his direction, undertook an expedition through the region. Despite its proximity to centers of population, it was then for the first time thoroughly explored by white men. Ours was virtually a voyage of discovery. We paddled our light boats on lakes and camped on islands that, I have good reason to believe, had never before been visited by any human beings but Seminole Indians, and by these but rarely. We underwent so many hardships that some of our party were compelled to turn back, but our efforts were not in vain, for we ascertained the important fact that the Everglades, along the whole 160 miles of the eastern side, are

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rimmed by a rock ledge. We furthermore learned that all of the lakes are several feet above sea level, and we decided that there was nothing whatever to prevent the water of the lakes from flowing into the ocean and leaving the land drained if vents could be made in this long ledge of rock. The chief question before us pertained to the practicability of cutting through the ledge in various places, and dredging out outlets into the Atlantic, which is not more than two or three miles away at numerous points.

"Experiment proved that this work would present no great difficulties. It was merely a matter of a great deal of digging. Henry M. Flagler took up the project, and it is being carried out by his lieutenants. We are not only making artificial outlets through the rock, but are also, by ditching and dredging, turning large bodies of water into rivers and creeks which flow to the ocean. The work has progressed far enough to enable me to predict confidently the opening in Florida, within a very few years, of a great tract of land of almost unprecedented fertility."

When one considers what the Bermudas yield, with only twenty square miles of rocky land, the possibilities of this great Southern tropical peninsula seem almost limitless. The whole region is one of great interest, and although one of the first to be explored and partly settled it has remained dormant until lately. Settlement is difficult, but gradually obstacles are being overcome, and when competition in transportation facilities develops, the boom will be on in earnest.

This region of perpetual summer is also the natural gateway to the West Indies, and the great peninsula of Florida, like a huge finger, directs the way to fertile regions beyond, awaiting American capital and enterprise.