TOPOGRAPHY

Generally speaking, the surface of South Florida is flat. Outside of Highlands County there is probably no point in the area treated more than 125 feet above sea-level, and perhaps none over 100 feet south of Hardee County. In the flat portions some of the streams have cut narrow valleys, which may be as much as 50 feet deep along the Peace River and some of its tributaries in Hardee and DeSoto Counties, but are usually much less. The flat areas away from the streams are dotted with shallow basins usually a foot or two in depth and several acres in extent, whose origin has never been satisfactorily explained.

The lake region in Highlands County, often called the "Ridge," is apparently all more than 100 feet above sea-level, and the highest points in South Florida, near Avon Park, are probably about 175 feet. The descent from this upland to the flat country around it is rather abrupt in many places, so that railroads passing from one region to the other have a long cut through the upland and a long embankment in the lowland, each as much as a mile long in some cases. This is especially noticeable on the Seaboard Air Line north of Avon Park and east of Sebring, and on the Atlantic Coast Line south of Venus. (On the latter road the elevation of Venus is given as 118 feet, and that of Palmdale, the next station south, as 52 feet.)

This abrupt transition has been regarded by some observers as a marine terrace, and by others as evidence that the sandy uplands are ancient dunes; but neither explanation seems to fit all the facts. The hills of the lake region (at least in Polk County, where they are very similar in appearance to those of Highlands County) are underlaid by a pinkish sandy clay, which stands higher than the flatwoods, and could not have been heaped up by the wind, unless in a very dry climate. And most of the deep sand in the region is more loamy than any known dune sand, and furthermore its topography is different from that of any known dune area. It is not improbable, though, that the sandy hills, however they were formed, have been gradually and imperceptibly smoothed off by the wind, and that process may be going on today.

The lake region, as its name implies, is dotted with lakes of
various sizes, ranging from a few acres to five or six square miles in extent. (The larger lakes, such as Istokpoga and Okeechobee, are entirely outside of the lake region, and surrounded by flat country.) Just how the lake basins were formed is still an unsolved problem. There does not seem to be any limestone under them thick enough and pure enough and near enough to the surface to make lime-sinks, and the hills around them could hardly have been piled up by the wind, as stated above. But whatever their origin, the combination of smooth hills and lakes is very pleasing to the eye, and causes the whole lake region to be a favorite winter resort.

The only other elevations of any consequence in South Florida are the old dunes along the east and west coasts. Modern or active dunes, such as are found along the coast of Georgia, and still farther north, hardly exist in South Florida, the wind hardly ever piling up the beach sands to more than five or six feet above high tide in our latitudes; possibly because in this warm climate the vegetation spreads over the sand more quickly and holds it in place better than in higher latitudes, or else because of the large proportion of shell fragments in our beach sands.

But at some time in the past, perhaps a few thousand years ago, the wind must have been stronger or the climate colder or drier, for there is a nearly continuous line of steep-sided old dunes just west of the Indian River and other coastal lagoons, from about St. Augustine to Fort Lauderdale. They are said to reach a height of 63 feet above sea-level at Olympia (formerly Hobe Sound) and 47 feet at West Palm Beach, and some of those near Jensen must be at least 50 feet high. (See fig. 44.) These dunes usually extend about half a mile inland from the shores of the lagoons, but outlying areas of them are found in a few places five or six miles from the coast.

High old dunes are much scarcer on the Gulf coast. One might imagine from the map that they would be well developed on Sanibel Island, on account of its exposed position, but apparently no part of that island is more than ten feet above sea-level. Possibly the great abundance of shells there has something to do with the absence of dunes. The most remarkable old dunes on the west coast are at Caxambas, at the southeast end of Marco
Island, in Collier County. The highest elevation there is variously estimated at from 60 to 85 feet. (See fig. 34.)

The old dunes along the east coast apparently indicate an uplift of a few feet in comparatively recent times.* For they are not only higher above sea-level than any modern dunes in Florida, but also sometimes too far inland for the wind to have much influence on them. They must have been formed when the Indian River was part of the open ocean, and the barrier beach east of it a submerged sand-bar.

Toward Cape Sable, however, there is evidence of a recent sinking of the land. Some years ago a dredge piling up an embankment for the road through the coast prairie to Cape Sable is said to have cut into a cave with stalactites, at or below sea-level, and filled with water.† There is no known way in which stalactites can form under water, so the cave must have been dissolved out of the rock when it stood above the ground-water level. The very irregular and dissected outline of the lower Keys, and the occurrence there of several species of plants and animals known on the mainland but not on the Upper Keys, also point to a recent submergence. But the upper Keys, being an old coral reef, must have been formed under water and then elevated, perhaps at the same time with the old dunes of the east coast.

Other evidence of submergence on the west coast is found in the wide estuaries at the mouths of the Manatee, Peace, Caloosahatchee and other rivers, which appear to be typical "drowned valleys," and have no counterpart on the east coast.

MINOR TOPOGRAPHIC FORMS

In the Miami limestone region there are numerous examples of topographic forms produced by solution, besides the small pot-holes found on nearly every square yard of the surface. Among the most conspicuous of these are the natural bridge over Arch Creek (crossed by the main highway at the settlement of Arch Creek), and several lime-sinks in Brickell's and other hammocks. The Miami pine land is intersected at right angles by a considerable

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number of "glades," which are elongated approximately straight depressions from a few inches to a few feet in depth, and from about fifty yards to half a mile in width. (See fig. 30.) Some of these extend all the way across from the Everglades to the coast prairie, while some open out only into the latter. They were presumably formed mostly by solution, for near their edges in some places there are fantastically shaped pillars and arches of limestone, with very jagged surfaces. (Fig. 49.) Smaller pillars of the same sort are so abundant around Paradise Key, where the Everglades and coast prairie meet, that any one walking across the prairie can hardly avoid stepping on them.

The inner edges of some of the Upper Keys have been undercut in a curious manner (see fig. 56), probably mostly by the solvent action of the water, but perhaps assisted by the gentle lapping of the waves. The resulting overhanging edges may project as much as two feet, with a vertical thickness of about the same amount.

Where the Miami oolite approaches Biscayne Bay there are a few wave-cut cliffs, apparently dating back to a time when the land stood a little lower than at present. The most accessible of these are at Silver Bluff (which probably takes its name from them), but they are now pretty well built over.