Archaeological Investigations On The Upper Florida Keys

by JOHN M. GOGGIN

DURING THE SUMMER of 1940 an archaeological survey was made of a portion of the Upper Florida Keys.[1] The area covered was from Virginia and Biscayne Keys on the north to Lower Matecumbe Key on the south, plus a portion of the west shore of Biscayne Bay. Summer is the least desirable time to attempt work in this area, but circumstances offered no other choice.

The area in question was inhabited by the Tekesta* Indians.[2] Apparently this tribe, like various others in the state, was more or less a political confederation of small local groups. There are many references to the presence of Indians on the Keys or "Los Martires" as the Spanish frequently called them, but few villages are named. Fontaneda does mention some towns, but they appear to have been located on the Lower Keys. In 1607 Governor Ibarra states that he received a visit from some chiefs, among whom were " . . . principal lords of the mouth of Miguel Mora." According to Swanton ". . . this name was given to the opening between the Florida Mainland and the Keys on the eastern side."[3] This may be the present Card Sound. The one tribe or village that is mentioned rather commonly is Matecumbe. This was probably located on the present Lower Matecumbe Key, because on many early maps it is called Old Matecumbe to differentiate it from Upper Matecumbe Key. The earliest mention is in 1573, when the Matecumbe Indians attained notice by killing a number of Spaniards.[4] It was again mentioned about

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1. The author wishes to thank Dr. J. W. Goggin, of Miami, and Charles Brookfield, of Elliotts Key, Karl Squires and many others for the aid they have given him. Dorothy F. Goggin aided in the field and made the accompanying plates.

2. Goggin (1940a), 274. (Bibliographical references in full will be found in the bibliography at the end of the article. Ed.)

* Tequesta sometimes spelled Tekesta or Tegesta.—Ed.

3. Swanton (1922), 342.

4. Connor (1925), 51.

1628-1629.[5] Bishop Calderón, in 1675, mentions two groups in the area covered by this survey. These, interestingly enough, are named after the extreme Keys which were covered in this survey. These tribes he calls the "Viscayños" and "Matecumbeses".[6] According to his account they were very savage tribes, "having no fixed abodes, living on fish and roots of trees." In 1697 it was reported that the Indians living on Matecumbe were "Catholics."[7] Romans states that Old Matecumbe was one of the "last habitations of the savages of the Calusa nation."[8] By 1800, or a little later, all the Indians had disappeared from this area. It was probably even earlier, for by the last quarter of the 18th century mahogany cutters from the Bahamas overran the Keys. They had various skirmishes with the dwindling remnants of the aboriginal inhabitants.

Geographically, the Keys mentioned are quite uniform. Virginia and Biscayne Keys, the northernmost, are the only Keys not similar to the rest. Geologically, they are underlaid by the Miami Limestone formation. The Keys, from Elliotts Key south are all of the Key Largo Limestone formation, which is an elevated coral reef, while the Miami Limestone is oölitic. In flora, Biscayne is again atypical. The other Keys are clothed with a stunted "tropical hammock" vegetable complex.[9] This is stunted because of the prevailing winds, occasional hurricanes, and the lack of soil cover due to the closeness of the rock to the surface. The trees are all broad-leaved, West Indian hardwoods, and many bear edible fruit.

Commonly, any typical Key may be divided into three physiographic zones. The outermost is the beach complex (on the east or southeast side). Here a narrow, coral-sanded beach comes down to the rock shore. This wind-swept beach is often separated from the main ridge by a narrow, shallow slough. The rocky ridge is covered with a stunted, though luxuriant, hammock growth. The western side is bordered by a thick, low mangrove swamp which covers the shallows up to the rocky ridge. On the edge of the mangroves are found most of the sites.

The mammalian fauna is rather limited. Bears were formerly common on Virginia and Biscayne Keys. As far as can be ascertained, deer were not commonly found on many of the Upper Keys. Romans says deer

5. Espinosa (1942), 109.
6. Wenhold (1936), 12.
7. Swanton (1922), 343.
8. Romans (1775), xxxiv.
9. Harper (1927), 111.

were found on Biscayne Key and "small deer" on Lower Matecumbe.[10] These small deer are probably the same species as those now found on the group of Pine Keys to the east of Key West. The most common animal in all the Keys under discussion was probably the raccoon. Wading and sea birds of all kinds were found in great numbers.

There is (or was) no running water on any of these Keys. All fresh water was obtained by digging wells in sandy beaches or from pot holes and sloughs where rain water collected.

Previous archaeological work in this area has been very scant. A few early anthropologists may have visited the Keys, but we have no published data. Moore, despite his many travels, did not explore the Keys. The botanist Small mentions a kitchen midden on Biscayne Key, which is the only reference to that Key site.[11] He later remarks that "as far as we know the only evidences of aboriginal occupation on the Upper Keys are two small Indian mounds near the middle of Key Largo.[12] Stirling visited the Keys on various occasions between 1933 and 1935, but as yet has not published his work.

The area investigated is the southernmost part of the Glades Archaeological area.[13] To be more specific, it is a portion of the Tekesta sub-area. This is differentiated from the Calusa sub-area by a number of traits ranging from pottery to mound forms.[14]

This survey was started on Biscayne Key, which is physically the beginning of the Florida Keys.[15] Geographically, as has been pointed out, it differs from the rest, but there is little possibility that its archaeology may differ. Until recently there was a midden about two-thirds of the way down from the north end of the key. This probably is the site to which Small referred.[16] In 1926 certain parts of the Island were filled with dirt dredged from the bay bottom; at this time the mound was covered. The midden was about 75 feet long, of oval shape, and stood 2 to 3 feet above high tide level in the mangrove swamp. It was of typically black soil with few shells. This summer, thanks to

10. Romans (1775), x.
11. Small (1929), 96.
12. Small (1930), 41.
13. Stirling (1936), 355.
14. Goggin (1941), 25.
15. According to Small (1929), 96, there is a site on Virginia Key which is across Bear's Cut to the north of Biscayne Key. However, this mound could not be located.
16. Small (1929), 96. Mention of a site on Biscayne Key.

Mr. Hugh Matheson, owner of that part of the Key, the midden was approximately located and a description of the site was obtained. Despite the fact that this mound is covered with from 2 to 5 feet of fill, it might be one of the most valuable middens in the area that has not been previously disturbed. This is Biscayne Key Site No. 1.

Site No. 2 on Biscayne Key is a sand burial mound situated behind the beach ridge a short distance north of the old lighthouse.[17] It is quite possible that there may have been a midden at the point of Cape Florida. However, in the past 100 years it is known that the sea has cut in some 200 feet or so at this point. Near here on the beach, below high tide mark, one worn shard of *Glades Gritty* ware was found.

Sands Key, the next large island to the south, was not visited. According to reports there is a shell midden on the inside of the Key and a small shell deposit on the beach side.[18] Romans, who visited here in the 1760's, called this key *Las Tetas* because of two small hills.[19] There are no natural hills on this key so he may have been referring to mounds.

Elliotts Key, directly to the south, although very large (nine miles long) has no mounds discovered on it as yet. The southern end, however, is quite unknown. This end faces upon Black Caesar's Creek, a natural channel leading out of the bay, and more than likely a midden is somewhere near. From Elliotts Key south to Key Largo, there are a number of smaller keys about which nothing is known archaeologically.

Key Largo has a number of mounds upon it that are known and probably others will be found from time to time, especially on the northern end. This key is about 30 miles long, and not more than a mile wide at its widest part. It was formerly covered with a dense jungle of hardwoods. The beach on the Atlantic side is rocky, with a reef some distance offshore. The west side of the key faces Florida Bay and that shore is a muddy mangrove littoral.

Key Largo Site No. 1 is about 8 miles south of the entrance to the present highway (U. S. No. 1) into the key and some 200 yards west of the highway. It is situated on the edge of the rock ridge which drops

17. Cited on the authority of Wirth Munroe, Coconut Grove, who is well acquainted with this part of the Key.
18. Reported by Karl Squires of Miami, who found a shell celt and stone pendant at the latter site.
19. Romans (1775), xxvii.

abruptly into the mangroves. In aboriginal times the Indians could have brought their canoes up to the site at high tide.

This mound is a midden composed almost entirely of black soil and ashes with a mixture of shell and bones. In some parts there are strata of fish bones over a foot thick. Some sections are also composed of strata of pure ash from an inch to two feet thick. Only a small percentage of the total content of the midden is shell. There are mostly large *Fasciolaria, Strombus* and *Busycon* shells. Bivalves are not common.

The midden has been mutilated to a great extent by the removal of the rich soil for gardens. No excavation was attempted because of mosquitoes, although this site was visited on several occasions. A large number of artifacts, mostly shell picks and potshards, were collected on the surface.

The greatest length of the midden (northeast-southwest) is probably 175 feet and the width about 75 feet. It is not much more than three and one-half feet deep at the maximum.

Key Largo Site No. 2 is about 14.5 miles south of the highway (U. S. No. 1) entrance. It is in the hammock, about 200 yards from the closest water, on a small point of the high hammock that extends to the bay side. No excavations were made. Fortunately, there has been little disturbance. At its highest point the fill is only about 2 feet in depth. Because of the heavy hammock cover it was difficult to determine the exact size of the midden area, but it is at least 200 by 300 feet across. A few shell tools were found here, but potshards comprised the major portion of the artifacts collected.

About 200 yards east of Key Largo Site No. 2, in the thick hammock, is the famous rock mound, Key Largo Site No. 3. This is the best known of all the Key sites, mainly because of Matthew Stirling's visits, and subsequent newspaper publicity, in the early 1930's.

The most conspicuous section of this site is the rock mound itself. However, it is apparently only a part of a large area which includes a number of features. The heavy hammock cover makes it difficult to get a true idea of the site, but there is no question that it is similar to the intricate sites of the Ten Thousands Islands area. Here, however, the material used is limestone fragments instead of shell.

The large mound is built of limestone rocks 10 to 12 inches in diameter, laid in rough courses. The elevation of the mound is about 8 or 9 feet. A few holes have been dug into this mound by treasure seek-

ers, but the damage is slight. These do reveal the interior construction of the mound and show that it was apparently all made of stone.

The outline is hard to determine on account of the heavy hammock growth, but it appears, roughly, to be kidney shaped, about 100 feet long by 55 feet at the widest. To the east there was apparently a sloping ramp which led down to a stone causeway which was traceable for at least 25 feet. This path is 1 foot high, about 14 feet wide, and made of the same stone as is the mound.

Some 130 feet west of the north end of this mound is a wall or ridge made of limestone. This is 2½ feet high, 8 feet wide and 70 feet long. The southern end is well defined, but the northern end loses itself in a very rough part of the hammock. It is thus difficult to determine how far the ridge extends.

It is quite possible that there are other structures in the immediate vicinity, but the thick forest makes it difficult to find them. Some of the trees on the large mound are almost 2 feet in diameter and 50 feet high.

No potshards were seen at this site and the only artifact collected was a broken shell pick. The closeness of the midden (Key Largo Site No. 2) would make one suspect that they were contemporaneous, but there is no ceramic or artifactual evidence to prove it.

Without doubt this site was primarily used for ceremonial purposes and may have been of more importance than one would suspect at a first glance. However, as far as is known at this time, there are no similar sites on the upper Keys although there are rumors of one somewhere in the Everglades.[20] The absence of potshards or other artifacts also tends to indicate that it was of special importance.

The next large island south of Key Largo is Plantation Key. About one-quarter of a mile from the south end of the key are mounds 1 and 2. These are situated on a bare, rocky flat behind the beach on the southeast shore of the Key.

Whether these are artificial mounds is doubtful, but it is very difficult to explain their occurrence from natural causes. They do not seem to be sand dunes because of the many large rocks and conch shells (*Strombus*) that are intermixed with the sand that forms the

20. In 1943, a stone circle 45 feet in diameter and 3 to 4 feet wide was found on Boca Chica Key, and Romans states that ". . . remains of savage habitations built, or rather piled up of stone" were to be seen on Key Vaca and Key West in his time. Romans (1775), 291. These sites are all in the Lower Keys.

mounds; nor do they appear to be former beaches, because they are quite isolated on the flat rock, although their long axes are parallel to the present beach a short distance away. Close by are some depressions from which soil and rocks may have been taken to form the mounds.

Mound 1 is a low ridge, 20 feet wide, 65 feet long and 2½ feet high. It is largely composed of loose rock with some sand. The orientation of the long axis is 10 degrees east of the south.

Ninety feet northward is Mound 2. This is an irregular rectangle, 75 by 105 feet in dimensions, and 4 to 5 feet high. Its composition is similar to Mound 1, but it is more sandy, and more *Strombus* shells were noticed on the surface.

No pottery or cultural material was found at either mound. The absence of dark soil or bones would preclude the possibility of this being a midden site, leaving the probability that they were ceremonial or burial mounds. It could be possible that these are modern, but it is somewhat useless to speculate without excavation.

On the north end of the key is Site No. 3. This was a former midden, and is located .9 of a mile south of Tavernier Creek west of the highway and close to the mangrove lined shore.

There is no midden deposit of any extent remaining as the rich soil has been removed for gardens. However, potshards were common and several shell artifacts were found in crevices in the bed rock.

Site No. 4 is a large midden a short distance northwest of Site No. 3. The mound is large, being approximately 200 by 300 feet and 6 to 7 feet high, with the long axis approximately north south. The predominant shells were *Strombus gigas, Livonia pica* and *Nerita versicolor*. Very few *Busycon perversa* were seen and although there were many bird and fish bones, artifacts were quite scarce. As a whole this mound has been very little damaged.

No sites were located on Windleys Key although it has been reported that a midden was formerly there which is now destroyed.[21]

On the south end of Upper Matecumbe Key, west of the highway is a sizable midden. It is situated on the slope of the rock ridge where the latter meets the mangrove lined side of the key. At the deepest the deposits are about 4 feet. A small boat harbor has been dredged through the northeastern side and gives a good cross section. There does not

21. Reported by Irwin Winte of Miami.

appear to be any particular stratigraphy and the composition is the usual mixture of soil and shells.

Potshards were common and a number of shell artifacts were found on the surface. One interesting thing noticed while examining the cut face was the occurrence of pockets containing large numbers of the bleeding tooth shell (*Nerita versicolor*). These were all broken in the same place for the extraction of the mollusk for use as food.

On the north end of Lower Matecumbe Key, behind the Matheson Dock and west of the highway, are several sandy ridges. These are covered to an unknown depth with midden material composed of shells and black soil. This whole is covered with a very dense growth of small *Yucca* plants, making surface collecting almost impossible. Some shards were found, all of which were undecorated *Glades Gritty* ware. These ridges may have been used for burial purposes. Considering the attention this key drew in Spanish days, it is surprising that there is not a larger site here. However, the Labor Day hurricane of 1935, which killed so many people in this area, destroyed large parts of this key. It would therefore not be surprising if earlier storms had destroyed a large part of any site.

In May 1944, through the courtesy of Mr. Hugh Matheson, it was possible to visit Lignumvitae Key and examine the reported site there. This was found to be a coral sand burial mound about 50 feet in diameter and 3½ feet high. It is little damaged, although it was badly washed over in the 1935 hurricane. The presence of small fragments of human bones on the surface would indicate its use as a burial mound. No shards or other artifacts were seen.

It has been reported that a shell mound has been found on Indian Key but it was not visited. It was also impossible to visit the site on Teatable Key, although specimens from there were examined in the United States National Museum. These were a fragmentary shell pick, a shell celt and three *Glades Gritty* ware shards.[22]

MATERIAL CULTURE

Pottery, represented by shards, ranks first in whole numbers of artifacts found. Following this come articles of shell and bone, with occasional artifacts of stone. Wooden objects are rarely recovered from muck deposits, none were found in this summer's work.

The most common ware encountered on the Upper Keys is *Glades*

22. USNM 373834, 373835, 373836.

Gritty ware,[23] with some *Biscayne Chalky* ware[24] and a few shards of unidentified wares. No stratigraphic excavations were made but collections made at sites which had exposed faces, due to cuts and pits, showed no stratigraphy.

TABLE I[25]

NUMERICAL OCCURRENCES OF POTTERY WARES COLLECTED

	Glades Gritty Ware		Biscayne Chalky Ware			
	Pl.	Inc.	Pl.	Stamped	Misc.	Total
Key Largo—Site No. 1	480	44	24	6	4	558
Key Largo—Site No. 2	313	27	1	0	2	343
Plantation Key—Site No. 3	22	3	6	0	0	31
Plantation Key—Site No. 4	85	3	4	3	2	97
Upper Matecumbe Key Site No. 1	112	10	2	4	2	130
Lower Matecumbe Key Site No. 1	28	0	0	0	0	28

However, certain *Glades Gritty* ware designs show a variation in distribution. The commonest design motif is two incised lines below the rim, varied on occasions to either one or three lines. These motifs occurred at all sites where incised shards were collected, with the exception of Key Largo Site No. 2. Here a new motif appears, consisting of pendant loops around the vessels under the rim[26] (Fig. 1, a-f). Associated with this "pendant loop" design are "diagonal parallel lines" and cross hatched motifs (Fig. 1, g-i). These last mentioned motifs are represented by only a few examples.

At the time of the first draft of this paper, the only other occurrence of this design was one shard from the Little River Midden. However, recent work (1943) has disclosed a new site—Sour Orange Midden—just west of Miami, where the "pendant loop" design is predominant. Along with this are "diagonal parallel lines" shards. Also, new test pits in the Mulberry Midden (west of Opa Locka) have disclosed "pendant loop" shards. These had not been found previously. Neither of the above sites produced any of the "line below the rim" design which is so dominant in the Tekesta sub-area.

Plantation Key Site No. 4 produced a large number of shards which

23. Goggin (1939), 37.
24. Goggin (1940b), 30.
25. Shard collections of Karl Squires and Gaines and Peyton L. Wilson of Miami were also examined. However, these are not included in this table.
26. Goggin (1939), 39.

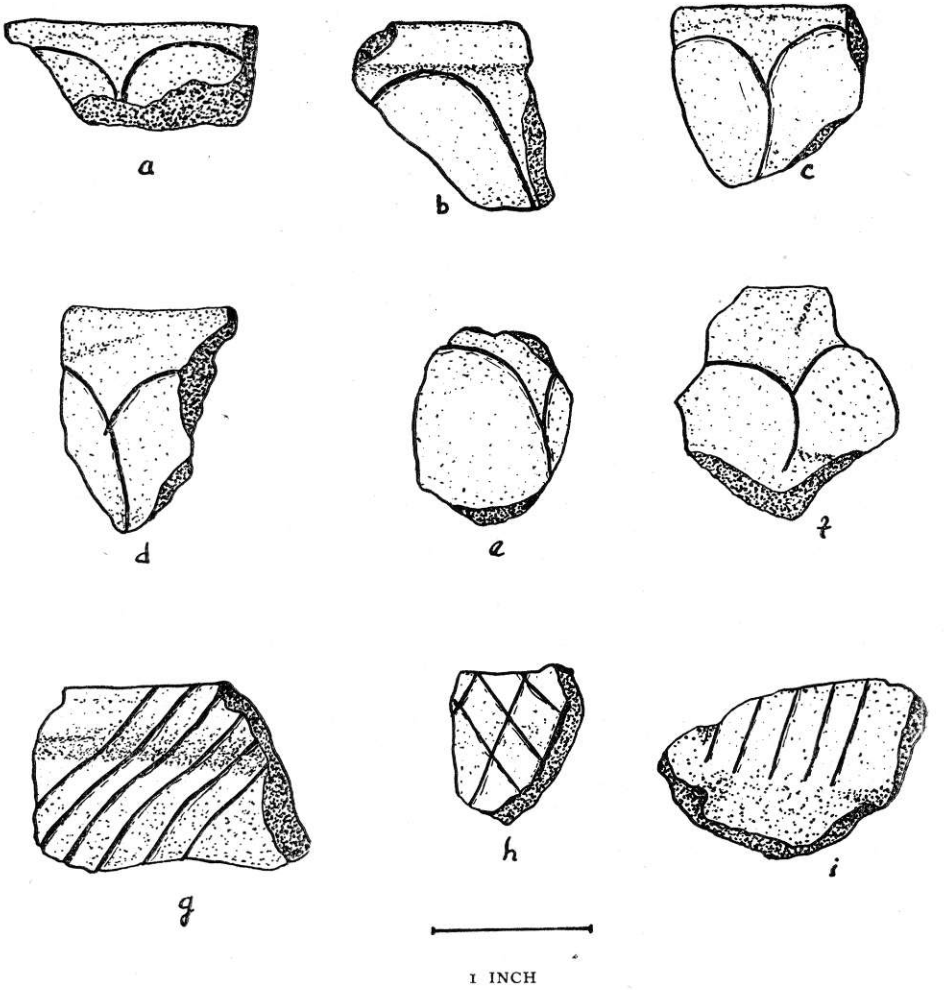

FIG. 1. SHARDS FROM KEY LARGO NO. 2

a-f, examples of Pendant Loop Designs; g, i, Parallel Line Designs; h, Cross Hatch Design.

are the thin, hard type of *Glades Gritty* ware typical of the Coot Bay midden.[27]

Five shards showing evidences of lugs were collected; four from Key Largo Site No. 1 and the other from Upper Matecumbe Key. These are quite unusual and are not recorded from elsewhere in the area (Fig. 2, a, c). The lugs appear to be roughly triangular and attached at more or less of a right angle to the rim. On all shards the outside incisions below the rim continue onto the lug and, in addition, two or four lines are incised on the upper surface of the projection.

Biscayne Chalky ware occurs at most sites, but nowhere in any great quantity. The majority of the shards found are typical soft ware, but a few are of the harder type which rings when struck. One difference from the Miami district is that the shards are cream to buff, instead of white to grey. The stamped shards are typical in all respects. One plain fragment with *Biscayne Chalky* ware paste had a dark red interior slip similar to North Central Florida wares.

A few shards of miscellaneous plain wares occur at some sites. These are usually shell tempered, plain ware, occasionally with an inside red slip. One shard tempered fragment of pottery was collected at Key Largo Site No. 1. Shard tempered wares are rare in any part of Florida. One interesting decorated shard, which apparently is a trade ware from the West Florida Coast, was found at Key Largo Site No. 1 (Fig. 2, g). The decoration is a combination of incising and deep triangular punctations on a cream colored paste similar to *Biscayne Chalky*. Another shard, apparently the bottom of a vessel, with a paste similar to *Glades Gritty*, had a heavy red interior slip. The outside was marked with large crude punctations. This was found at Plantation Key Site No. 4. (Fig. 2, h). Another unusual shard from Upper Matecumbe bears a crudely worked conical boss.

MINOR ARTIFACTS

Shell Picks: Picks, or more likely adzes, made from the sinistral *Busycon perversa*, are the most numerous artifacts, other than pottery, found in Southern Florida. They are present in sites along the entire coastline of the state, and to some extent in the interior. Various workers have described them, particularly Moore, who has figured various

27. A collection made in May, 1944, at Upper Matecumbe Key revealed one shard of the "pendant loop" design. This is the first site where it has been found associated with the incised lines below the rim.

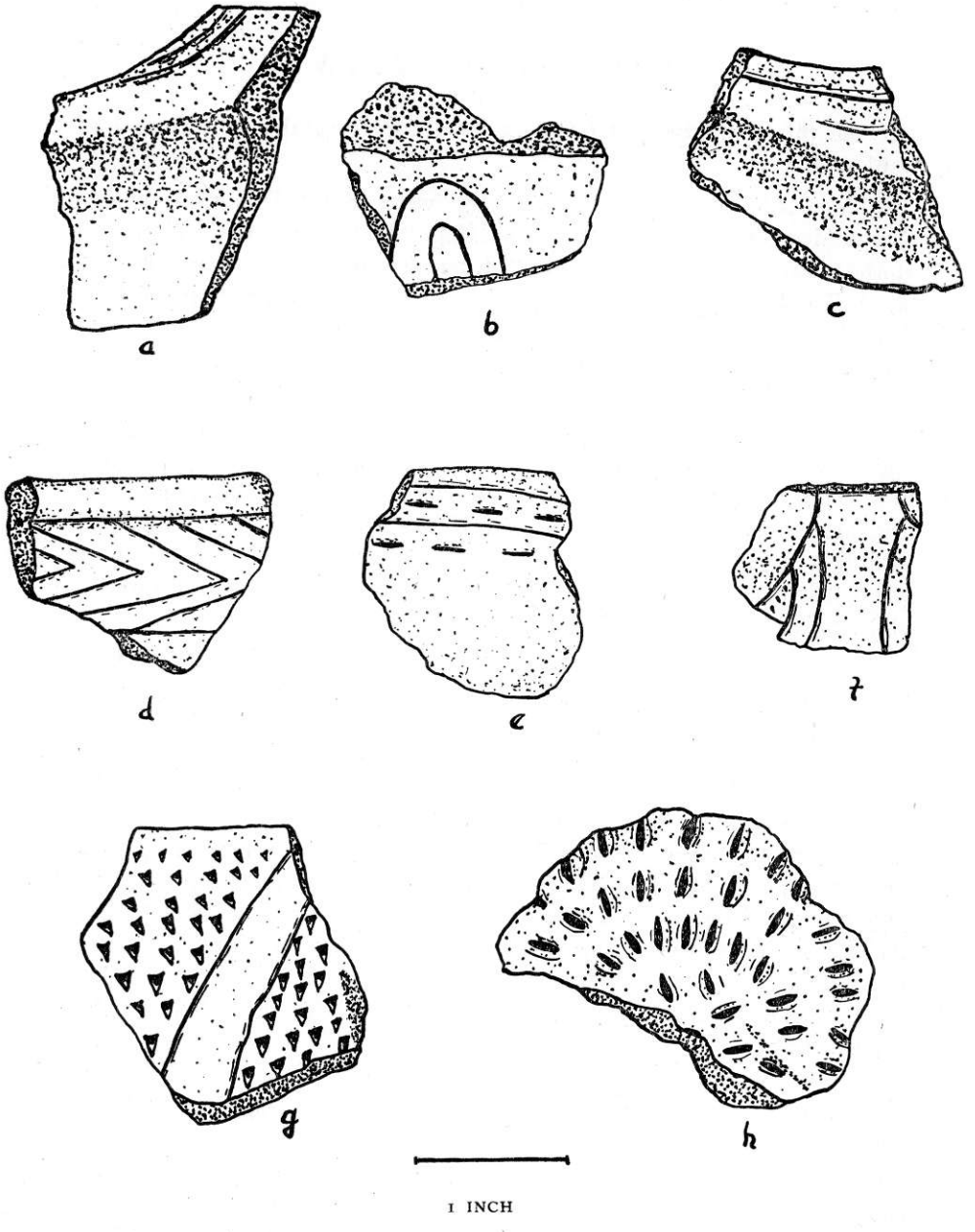

FIG. 2. SHARDS FROM KEY LARGO NO. 1
a, c, Rim lug specimens (interior aspect); b, d, e,f, miscellaneous variant incised examples; g, probable trade shard from West Central Florida Coast; h, unusual punctate shard.

types from the Florida West Coast.[28] In this paper, the shell picks found will be analyzed with an effort to ascertain certain techniques of their manufacture, and their use. Comparisons, as well, will be made with specimens from other parts of the Glades area. Fifty-eight picks were collected. Of these 50 came from Key Largo Site No. 1. Although the others are typical in all respects, it has been thought best to consider those from the one site for study as a group. All, however, cannot be analyzed for every characteristic, as some have a broken blade, others a broken spire or whorl.

The shell was utilized by cutting a notch in the lip a short distance below the shoulder. On the other side of the shell, opposite this notch, a hole was made by pecking. The haft was fitted into the notch, forced past the columella and into the opposite hole.

The average size (39 specimens) is 5½ inches. Twenty-two of the specimens range from 5 to 6¼ inches, while the total range is 4⅜ to 8½ inches.[29]

Although the haft is set at a right angle to the blade on most picks, a few have blades that slope in towards the wielder. These must have been used like an adze. The tools as a whole seem to be well adapted for the cultivation of the soil, digging roots, and breaking open shells. As weapons they would be excellent. Specimens that have been hafted experimentally have a fine balance.

Variation in the type of supplementary lashing used to secure the haft on these tools appears to be original. This is indicated by the presence or absence of holes in the whorls on the top of the shell. A series of 43 picks showed 33 with one hole, 4 with 2 holes and 6 with a solid top.[30] The presence of lashing holes in the top probably indicates some influence from the Ten Thousand Islands section, where such a practice is common, rather than from the North, where it is not usually found.

As would be expected in a primitive group as poor as this, very few tools were discarded until they were absolutely useless. Almost all of

28. See Moore (1900), (1905a), (1907a), (1921), Harrington (1924).

29. The average of a series of 17 picks from Surfside is 4.6 inches. The range being 3¼ to 6 inches, 4 specimens under 4 inches and 12 specimens between 4 to 5 inches. This is the smallest series of picks seen. Contemporary shell collectors report that specimens of *Busycon* from this area average smaller than those from the West Coast and the Keys.

30. In contrast, out of 14 Surfside specimens, 13 had a solid top and 1 had two holes in the top.

the specimens found show evidences of breakage and reworking to form another suitable implement. The most usual breakage was the blade. This was remedied by grinding the columella and channel to a new edge. As a result of this reworking the used tools have a wider blade, while the newer ones have a narrow and pointed one. The next most common point of breakage was probably the lip, where pressure of the haft split off the bottom of the notch. Frequently the hole on the back of the pick, into which the end of the haft is inserted, is also broken. The remedy for both of these types of breakage was a new hole an inch or so to the right of the first one, and the lip trimmed back and a new notch cut opposite the new hole. Another method used when the lip was broken, but the hole intact, was to make another hole in the body of the shell to the right of the lip so that the shaft was passed through two holes to the right of the columella.

One result of the reworking was the turning of the cutting edge of the blade so that it was no longer at a right angle to the stroke or swing of the implement.

Rarely, other shells are pierced for hafting as crude picks, but they never have a sharp blade like the *Busycon*. A specimen made of a *Fasciolaria gigantes* shell, from Key Largo Site No. 1, was hafted by means of two holes made through the whorls next to the columella. A *Strombus gigas* pick from Plantation Key Site No. 3 was hafted exactly like those made of *Busycon* shells, with the notched lip. The haft was on the opposite side of the columella, of course, as the *Strombus* shells are dextral.

Shell Dippers: These are *Busycon perversa* shells whose columella are removed, leaving the basin-like outer whorl with the channel as a handle. Fourteen dippers were collected,[31] which are in every way typical of those found throughout the Southeast. None of them, however, were engraved. It does not appear that much care was taken in their manufacture, as none of the edges were ground or smoothed. In size they ranged from 5½ to 12½ inches, with 11 falling between 6¾ to 8½ inches. The capacity of an 8¼ inch specimen is 18 fluid ounces, that of a 6 inch specimen is only 5½ fluid ounces.

Shell Dishes: These, too, are made from the shell of the *Busycon perversa* in a manner similar to the shell dippers, but the channel is also removed and the sides trimmed down to make a shallow basin. Only

31. 8 from Key Largo 1, 5 from Upper Matecumbe Key and 1 from Plantation Key 4.

four specimens were collected. Two from Key Largo Site No. 1 were 6¼ by 6¼ inches and 5¼ by 4½ inches. Two from Upper Matecumbe Key were 5½ by 5 inches and 3 by 3½ inches, respectively.

Shell Celts: These were not plentiful, as only 18 broken and whole specimens were collected from Key Largo Site No. 1, Upper Matecumbe Key, and Plantation Key Site No. 4. In size they ranged from 3⅝ to 6⅝ inches. With one exception they were all of the roughly parallel sided form. The exception was a 6¼ inch specimen from Plantation Key Site No. 4, which had a rounded blade and a roughly triangular shape..[32] Most of the parallel sided specimens have rounded blades. Although these implements have been called celts in the literature for many years, it is more likely that they were used as adzes.

The blades of all specimens have been ground on one side only, as is the common case with adzes. Unfortunately, the tools show no indication of the angle at which they were hafted.

The distribution of the various shapes of celts is not well known, although they are many times more abundant on the East Coast than on the West. Material from Surfside shows a proportion of 11 parallel-sided celts to 3 roughly triangular-sided specimens. Large numbers of celts taken from the Ralph M. Munroe site at Coconut Grove, on Biscayne Bay, were all of the roughly triangular shape.

Net Weights: Two different types of sinkers or net weights were collected at Key Largo. Neither type are plummets, which are considered to be ornaments and are described under that category.

The more sophisticated type of weight that was used on nets or lines is an oblong limestone tablet with a perforation near the top. Two specimens found are 3⅝ by 3 inches and 4 by 3⅝ inches, with a thickness that varies from ¾ to 1 inch.[33] The holes are drilled from both sides, ½ inch in diameter, and show wear. They were shaped by pecking and grinding. A similar specimen of fossil coral, 3 by 3¾ inches, came from Upper Matecumbe Key. It had a ½ inch central perforation.

Only two specimens of the other type of net weight were brought in from the field. These are single valves of a clam, *Lucina tigrina*. They are very thin and light, although 2½ inches across, which would in-

32. This somewhat approximated the petaloid shape of the West Indian stone celts.

33. Gaines Wilson has collected a weight of this type from Key Largo 1. It is circular, 4½ inches in diameter and ⅞ inch thick, and is pierced in the center by a hole ½ inch in diameter.

dicate their use in clusters. *Arca ponderosa* shells are most commonly used for weights in other sites, but none were seen here.[34]

Bone Artifacts: Bone artifacts as a whole are rare in surface collections but common from excavations in Southern Florida, so the material which comes from pits in Key Largo Site No. 1 is perhaps not truly representative. Nothing was found at the other sites.

An unusual object from Key Largo Site No. 1 appears to be a bone foreshaft for a composite arrow or dart. (Fig. 3, e). It is made of a dense bone (probably deer), is 3½ inches long and ¼ inch wide. One end tapers to what was once a sharp point, while the other has been cut to fit into a socket. It shows evidences of a high polish and was probably straight, although now it is quite warped. Only a few other references to this type of artifact can be found. There is a specimen reported by Wyman from St. John's River,[35] and three fragmentary specimens in the Squires collection. One of these is from Surfside and the others from Belle Glade. Two shanked bone points were found at the Vero site.[36]

The Key Largo specimen appears more like a foreshaft[37] than any of the others. They appear to be too slim. Also an incised bone pin in the Squires collection from Belle Glade has a shank. Moore found, on the Upper St. John's River, shanked pins which showed traces of bitumin.[38] Those found by him appear to have been ornamental hairpins. Larger ornamental objects carved in wood were undoubtedly affixed to the shank of the bone pins. So it is more than likely that all of the specimens found in Southern Florida were composite ornamental pins, yet there is a possibility that composite arrow points may have been present.

The tip of a sting ray spine, 1¾ inches long, may have been a projectile point, although it shows no evidence of working. Similar points showing notches made for hafting were found at Surfside. They are also reported from the Florida West Coast at Crystal River.[39] This culture item is one of the few traits that finds counterparts in Central and South America. They are found in Maya Area at Piedras Negras,[40] and

34. Goggin (1939), 40.
35. Wyman (1875), 40.
36. Sellards (1916), Pl. 23.
37. It is almost identical with wooden specimens from the Southwestern Caves.
38. Moore (1895), 21.
39. Moore (1907b), 21.
40. Lothrop (1937), 423.

at Holmul,[41] where they are described as awls. In Panama they are abundant at Coclé,[42] and Mason found them in the Santa Marta district of Colombia.[43] He also notes their use as arrow points among the present day Goajiro Indians. It is quite likely that this distribution is merely a coincidence due to the availability of identical resources in a similar tropical environment.

One small perforated shark's tooth, ¾ inch long, was collected. (Fig. 3, d). It is uncertain whether this was worked for an ornament or to be set in a club, as Cushing found a club studded with shark's teeth at Key Marco.[44] Other specimens of single perforated teeth have been found at Surfside and with a burial at Pine Island, on the West Coast.[45]

The ever present bone pin is represented by two small fragments. One section of a point is 1¾ inches long and ¼ inch wide. This still retains a high degree of polish. The point is neatly shaped and polished, but is not sharp enough for an awl. This fragment appears to be a section of one of the long pins (7 to 9 inches), which were probably worn in the hair. The other is 2¼ inches long, and though it is badly eroded, there is little doubt as to its former identity.

Ornaments: The only ornaments collected were two whole and one broken pendants from Key Largo Site No. 1. These pendants, often called plummets or plumb bobs, are very characteristic of Florida archaeology. Various uses, other than ornamentation, have been postulated, such as net weights and sinkers, but whenever specimens are found with burials their positions are such as to indicate that they were used for adornment. All found here were with midden material.

The finest example is a pear-shaped specimen made from pumice.[46] It is 2 inches long, 1 inch in diameter, with a net incision around the small end. It is naturally very light and has a very rough surface. (Fig. 3, b).

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41. Merwin and Vaillant (1932), 90.
42. Lothrop (1937), 97.
43. Mason (1936), 232.
44. Cushing (1895).
45. Moore (1905), 305.
46. Pumice is found on the beaches of Southern Florida where it has drifted from the volcanic islands of the Lesser Antilles. Fragments occur in most middens which show its use as an abrasive. It might be noted that there was found at Key Largo 1, a small pebble of a green serpentine-like material.

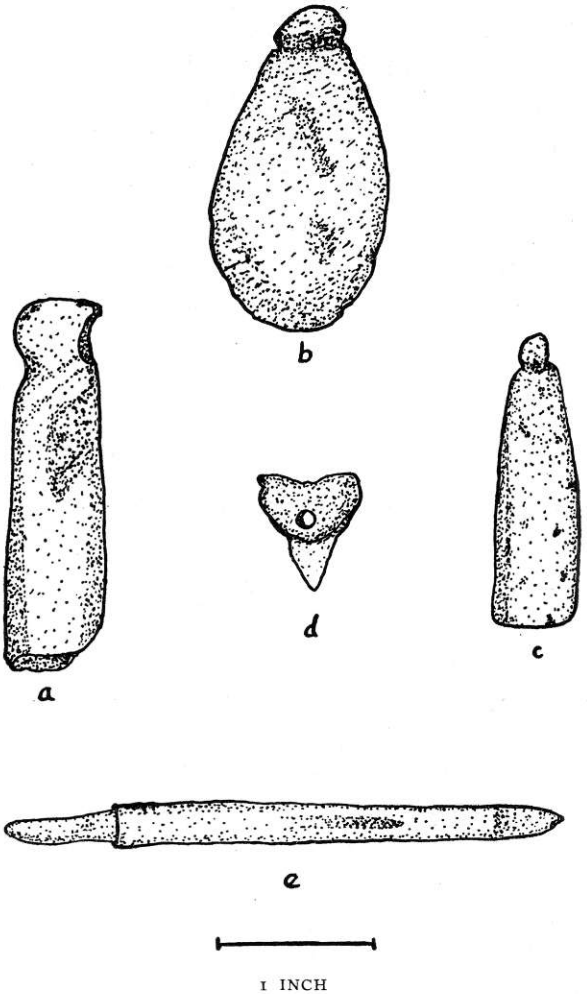

FIG. 3. ARTIFACTS FROM KEY LARGO NO. 1
a-c, Pendants; d, perforated shark tooth; e, shanked bone point.

Another pendant, a long narrow triangle, made of limestone, is 1⅞ inches long and ½ inch wide at the bottom. The surface is poorly finished. (Fig. 3, c).

A broken specimen made from the lip of a *Strombus gigas* shell is 2¼ inches long and ⅝ inch wide at the widest part. Instead of an encircling incision it has two opposite notches offset in such manner as to

give the impression that some effigy was attempted. The surface is fairly well finished. (Fig. 3, a).

Subsistence: The extension of this work to the Keys has shown the utilization in large quantities of shell fish not used in the near-by Florida areas. These are the *Nerita versicolor* and the *Livonia pica.* Large pockets of broken *Nerita* shells were found in the Upper Matecumbe Key midden and at Plantation Key Site No. 4. They were all cracked in a similar manner to extract the snail. At the present time the snails are not eaten in Florida, although they are great favorites of the Greek people and the Polynesians.[47]

Of the three large conchs found in the mounds, the *Strombus gigas* is the only one popular for food at the present time. The *Busycon perversa* and the *Fasciolaria gigantia* are considered too tough, although the latter is still occasionally ground and used.

The *Livonia pica,* which is found in such quantities at Plantation Key Sites Nos. 3 and 4, is rather rare nowadays in the Keys, but is considered to be a great delicacy in the Bahamas.

The presence of great quantities of fish bones would indicate a large utilization of such food.

Summary and Conclusions

The sites and material examined seem to belong to the Glades area beyond question, and in particular the Key materials falls into the Tekesta sub-area. There is no evidence of contact with the Antillean area despite the close proximity of the Keys to Cuba and the Bahamas.

Various writers have postulated Mayan connections with Southern Florida and in particular Key Largo Site No. 3. There is absolutely no concrete evidence of such relationships. The stone mound on Key Largo Site No. 3 does not resemble any Mayan structure and the pottery in the area is in no way similar to Mayan ceramics as has been claimed. It was further reported that obsidian knives were found near the stone mound.[48] If such were true, trade relationships with Mexico would be established, however, none were found during the period of work described in this paper.[49]

There is not enough space available in this short paper to discuss all

47. Thanks are due to Henry Frampton of Miami for material on the modern utilization of marine mollusks.

48. Gifford and Gilbert (1932).

49. In conversations with Dr. Gifford (Spring, 1943), he says there was some mistake about the report of the obsidian knives.

the ramifications of Antillean and Southeastern cultures. Certain isolated traits which appear to be common to both the islands and mainlands are repeatedly pointed out by careless, or romantic, writers and offered as proof of important cultural affiliations of the two areas. Complete cultural connections must be based on high percentile similarity of exhaustive cultural trait lists comprising subsistence, religion, social and linguistic, and artifactual material. So far, we have certain similarities and a few common traits of material culture and little else. As for subsistence in the Antilles, the cassava, or manioc, is the basis of the entire food complex, and in this respect shows the basic food derivation from the Amazon and Guiana regions of South America.

In the southeast, generally, the agricultural complex is basically maize, with beans and squash. In Southern Florida, the nearest area to the Antilles, all Spanish reports emphasize the fact that agriculture of any type was entirely lacking. The religious and social systems are not thoroughly known as yet in the Antilles, but at the present time there appears to be little similarity to the Southeastern United States. Language appears to have no similarity at all. The Calusa, who may have had the majority of contacts with the Antilles, speak a little known language which appears to be related to the Choctaw.[50] The most important item of material culture—pottery—refutes by direct evidence the possibility of important connections.[51] No example of West Indian pottery is known to have been found in south Florida, although slightly similar pieces are found in West Florida and in Georgia.

Although no stratigraphy was seen, a carefully planned excavation may reveal some chronology in pottery designs. No European material was seen, perhaps indicating that most of the sites were not occupied in Post-Columbian times, although aborigines are referred to by Spanish writers. Even though the Indians had little direct trade[52] with the Spanish they must have procured large quantities of plunder from the many ships wrecked on the Florida reefs.

The absence of more burial sites is quite puzzling, especially as no evidence has been found as yet of burials in the middens. It is impossible to excavate a grave on the keys except on the beaches, because of the rock, and the beaches are constantly shifted and destroyed by the

50. Swanton (1922), 30.
51. Goggin (1940b), 27, 29.
52. They had practically nothing to offer to the Spanish.

sea. It is possible the Plantation Key Sites Nos. 1 and 2 and the sand ridges at Lower Matecumbe Site No. 1 may prove to contain burials.

Towards Cape Sable, to the west of the main chain of Keys, there are a few small keys, but they do not appear to have been occupied in aboriginal times.

The remarkable discovery by Cushing of finely carved and painted wooden objects at Key Marco[53] is well known to archaeologists. However, little has been found on the East Coast.[54] Considering the recent findings of Stirling[55] at a canoe landing near mounds close to Belle Glade, there is still hope that similar finds may be produced from the Keys. Some possibilities are offered here. Considering the topography, it would appear that the best chances would be at Key Largo Sites Nos. 1 and 2 and on Upper Matecumbe. These sites abut upon the thick mangrove swamp which lines the inner side of the Key, and undoubtedly canoe trails were kept open from these sites to the Bay of Florida. It is quite possible that in the muck areas at the foot of these sites the perishable material may be found buried. The situation is somewhat like that which Stirling found at Democrat Creek, near Belle Glade.

However, any excavation endeavoring to recover this material would be quite costly, necessitating great care, as the area considered is a tidewater, mangrove swamp.

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53. Cushing (1896).

54. Goggin (1942).

55. Stirling (1935).

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