



*P. O. Drawer AR, Stony Brook, N.Y. 11790*

# NEWSLETTER

REPRESENTING NASSAU AND SUFFOLK COUNTIES

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Editor: Don Thomas Crane

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## Did They Know What They Were Doing?

Don Thomas Crane

In the 37 years since Carlyle Smith put forth the ceramic taxonomic structure of Woodland Period cultures for Long Island, ceramic analyses in this area have perpetuated that structure. When concerns are restricted to cultural speculation - defining affiliations by design characteristics, and explaining deviation through the forces of trade, diffusion, or invasion - little is learned about the ceramicists or their wares. At best, we guess the functional uses of pottery and assume that technology improved with time.

I talk here about the effects of temper on porosity. No revelations are guaranteed; an inventive analysis is not presented. In fact, the usefulness of porosity in formal analysis has met with limited results. Anna Shepard (1956) wrote that porosity has no value for identification. Frederick Matson (1937), in a study on Fort Ancient and Younge Site ceramics, concluded that the porosity of grit-tempered ceramics from different areas are similar.

My work with Utatlan (Guatemala) ceramics revealed that comals, a cooking vessel, had a higher porosity than other utilitarian and ceremonial vessels. More importantly, however, a separate ware whose surface contained an extraordinarily large amount of mica revealed a porosity lower than the other categories in that study. My intrigue with mica led to experiments with other temper materials. What I discovered, particularly with respect to shell, was that temper materials do affect ceramic bodies. What I discovered was already common knowledge amongst archaeologists Gordon Steponaitus, Owen Rye, Frederick Matson, and Anna Shepard. Nonetheless, I here discuss that study in the context of prehistoric Long Island.

Porosity, though seeming to be a cold and abstract calculation, is best imagined as a sponge. The holes, or pores, of a sponge, although exaggerated, are the same as those in ceramics. It "increases the resistance of fired pottery to thermal shock because the grains in a porous mass have more freedom of movement than those in a dense one; also the stresses produced by sudden changes in temperatures are relieved when there are numerous air pockets, and porous clay vessels can withstand sudden changes in temperature that would shatter dense ones (Shepard 1956)."

Temper is a material added to clay to allow water to be driven off during the drying and firing processes. Temper "counteracts shrinkage and facilitates uniform drying, thus reducing strain and lessening the risk of cracking (Shepard 1956)."

# NATIVE TECHNOLOGY



Long Island's **Channel 21** videotaped the Advanced Placement Archaeology Field School for Boces II and the Young Scholars program at SUNY Stony Brook. The tape, which ran in conjunction with a story on the Shinnecock, was aired on the **NEWSLINE** program on Thursday, July 30th at 6:30 P.M. The show featured interviews with Marguerite Smith, an attorney for the Shinnecock, and Dr. Gaynell Stone, Director of the Long Island Culture History Lab and Museum.

SCAA's Long Island Native American programs and materials were displayed and discussed at the **American Association of State and Local History** conference held in Raleigh, North Carolina between October 4-8.

The Indian and Archaeology program was described by Dr. Gaynell Stone at the October 14 session of "Resources for Elementary Teachers," a science course for elementary school teachers. The course is taught by Susan Ahern as part of the new Center for Science Teaching at SUNY Stony Brook.

Dr. Gaynell Stone is a member of the newly-formed Archaeology in Education Committee of the Society for Historical Archaeology. The group will conduct a symposium on current issues and approaches at the 1988 SHA meeting.

The illustrations at left are of posters that were funded in part by the New York State Cultural Affairs Arts-In-Education program and the Suffolk County Office of Cultural Affairs.

The **Native Technology** poster, first in our Wall Reference Chart Series, is available for \$13 (includes shipping) if purchased through the mail. It can also be purchased at Hoyt Farm for \$10. Call 929-8725 or 543-7804 for bulk purchase and cost information.

The **After Your Visit** poster is offered free to participants in the Hoyt Farm programs. The artwork was drawn by Peggy Waide's fourth grade students (Shoreham-Wading River School District) as part of their classroom museum project.

## WANTED

If you're aware of news or events that would interest our readers, or want to submit a paper for publication in SCAA's **Newsletter**, then send your copy to: Don Crane, 23 Garden Drive, Fairfield, Connecticut 06430.

## Did They Know? (continued)

In the illustrations below, both taken in truncated form from Smith (1950), notice the frequencies of grit to shell temper at selected sites on Long Island. Strikingly apparent is the predominant use of grit as temper when pottery first appeared on Long Island sites. This was followed by increased use of shell. At contact, most pottery was tempered with shell.

SERIATION OF CERAMIC TRAITS IN COASTAL NEW YORK		Shell temper	Grit temper
Sebonac Focus	Sook Hides	██████████	■
	Sebonac	██████████	■
Clearview Focus	Clearview	██████████	██
North Beach Focus	Palham Boulder	■	██████████
	Matinecock Point	■	██████████
	North Beach	■	██████████

Seriation of Ceramic Traits in Coastal New York		Shell temper	Grit temper
Western Long Island			
Massapeeg Focus	Fort Massapeeg	██████████	■
Clasons Point Focus	Dosoris Pond	██████████	██████████
	Baker Hill	██	██████████
	Aqueduct	■	██████████
	Port Washington	██	██████████
Bowmans Brook Focus	Wilkins	■	██████████

That temper appears to have been purposely selected is apparent at the Kaeser Site in the Bronx. Approximately 81% of the ceramics were tempered with quartzite or sodium feldspar. These two raw materials, however, comprise less than 0.5% of the debitage. Despite the overabundance of shell at the site, only 6% of the ceramics were tempered with it (see Rothschild and Lavin 1977). How do we explain what appears to be a selective process in the use of raw materials as temper? Why was quartz and sodium feldspar desired inclusions in pottery but not in the making of tools? Why wasn't shell exploited for temper? Did pottery manufacture take place at the site?

### METHODOLOGY

In order to understand how temper materials differentially affect ceramic bodies during and after firing, tests must be administered in a controlled environment. An investigation of this kind must consider how the ceramic composition changes when varying both the amount of temper added and the firing temperature. The resulting data base can then be used to interpret the archaeological ceramics.

The clay used in this study was secured from a deposit along Makamah Beach in Huntington. The clay was passed through a 1mm sieve, weighed, and divided into 75 equal weights.

A quartz cobble was then crushed, weighed, and separated into five groups. One group of crushed quartz was then added as temper to one of the 75 groups of clay. The composition of the resulting mixture was such that the added quartz now weighed 7.5% of the entire piece. This process was repeated for the next four crushed quartz and clay groups. Five more groups of crushed quartz were then weighed and mixed with the next five groups of clay to produce mixtures in which quartz comprised 15% of the total weight. This entire process produced ten quartz and clay mixtures: the quartz in five weighing 7.5% of the piece; and 15% in the other five.

The process of crushing and adding temper to clay in the amounts of 7.5% and 15% was repeated by using sodium feldspar, sand, chert, shell, shale, and mica schist as temper materials. The last five groups of clay did not have temper added and served as the experiment's control.

Water was added to each of the mixtures to produce tiles of dimensions 44.5 mm X 40.6 mm X 19.05 mm. After air drying for two days, one control tile, and for each temper material, one 7.5% and one 15% tile were fired to temperatures of 510, 625, 750, 865, and 940 degrees Celsius.

Each experimental tile was weighed while dry. The tiles were then wrapped in nylon mesh (to prevent breakage) and placed in boiling water for two hours. The saturated tiles next were transferred to another container of water and allowed to cool for 3/4 hours. Individual tiles were removed, wiped with a cloth to remove surface water, and weighed again. Volumes were calculated by water displacement in a 500 ml graduated cylinder. Volume was determined as an average of the three trials.

The formula used to determine apparent porosity, defined as the ratio of pore space to the total volume of the piece, is:

$$P = \frac{Sf - Wf}{Vf} \times 100$$

where P = The percentage apparent porosity.  
Sf = Weight (in grams) of the saturated piece.  
Wf = Weight (in grams) of the dry piece.  
Vf = Volume (in cubic centimeters) of the piece.

### EXPERIMENTAL RESULTS

The porosity of the 7.5% and 15% experimental tiles were plotted separately along axes of Porosity vs. Firing Temperature. The plots, in more cases than not, produced bell-shaped curves. As the firing began, the porosity of tiles increased as water was driven away. At densification, or the point at which the capillary walls begin to collapse, the porosity began to decrease.

## Did They Know? (continued)

The Huntington clay turned into ceramic at some point between 500 and 625 degrees Celsius (C). All experimental tiles fired at 500 degrees C crumbled when immersed in water for volume calculations.

The porosity determinations for the 7.5% temper series revealed that the tempered tiles did not deviate much from the untempered control. At 625 degrees C, all tiles containing temper were more porous than the control specimen (31.5%). The shell-tempered tile showed a porosity of 38%; 2% more than the next highest tile. Near 750 degrees C a reversal occurred. Most tempered tiles were less porous than the control (34%). At this temperature, the shell-tempered tile, with a porosity of 37.5%, appears to have reached densification as judging by its decreasing porosity. I believe this to have been an error in the test, however. The control tile, and the tiles tempered with quartz, sodium feldspar, sand, chert, and mica schist did not reach densification until 865 degrees C (where porosities ranged from 34% to 36.5%). Only sodium feldspar and quartz were more porous than the untempered control (35.5%) at this temperature. Shale, which reached densification at 750 degrees C and with a porosity of 35.5%, appears to be the only material that acts as a flux. Shell induces an extremely porous clay body.

The data associated with the 15% temper series indicates that the raw materials now begin to exert their effects on the body structure. Shell again makes for an extremely porous clay body. It shows a porosity higher than any other material when fired to both 625 (35%) or 750 degrees C (36%). The porosity curves associated with quartz, sand, and mica schist, are interesting in that a downward porosity trend appears at low firing temperatures before the curve begins to swing upward toward densification. The upward patterns associated with these materials after 750 degrees C indicates that densification is probably prolonged until after 940 degrees C, where peak porosity ranges from 33% to 35%. The sodium feldspar tiles too showed this pattern, but its curve never did swing upward toward the higher porosity readings. The control specimen at 940 degrees C is well into densification and shows a porosity of 33.5%. Given the range of prehistoric firings, a vessel tempered with quartz, sand, mica schist, or sodium feldspar required intense preparation on the part of the potter to make a fire hot enough to reach densification. The shale-tempered series reaches densification when the control does (865 degrees C), but exhibits a less porous body (35% vs 35.5%).

Several important trends emerged from this experiment. First, temper material does effect porosity. If porous vessels were desired, shell and shale definitely would have produced a porous vessel at a relatively low firing temperature. Other materials, such as quartz, sand, mica schist, and sodium feldspar would have had to have been fired at an extremely high temperature to have achieved the same porous body that shell and shale exhibited at the lower temperatures.

Second, the more temper that is added to clay, the lower is that vessel's porosity after firing. Increased amounts of temper required both longer firing times and hotter

firing temperatures to induce densification. With the exception of shell and shale, prehistoric ceramics tempered with the silicates - quartz, sand, and mica schist - would have required intense heat to manufacture a porous vessel. The alternative would have been to add less temper. Temper in prehistoric ceramics generally account for 20% to 30% of the clay matrix; much more than what was used in this experiment. Because prehistoric firing temperatures probably attained a maximum of 1000 degrees C (Shepard 1956), the archaeological ceramics probably never reached densification.

Shell made for an extremely porous body. All shell-tempered tiles crumbled within a day or two when fired above 750 degrees C. This phenomenon has been reported elsewhere (Shepard 1956; Rye 1981). Carbon dioxide is driven from the shell during firing to form calcium oxide. After the firing process, this compound absorbs moisture from the atmosphere to form calcium hydroxide. This hydration increases the volume of the material to such an extent that the pressure crumbles the vessel (Shepard 1956). That shell temper induces an extremely porous body when fired at low temperatures (625 to 750 degrees C) was demonstrated. This is why Rye (1981) suggested that shell was used as temper in vessels manufactured for cooking purposes. High porosity enables a body to better withstand the thermal expansion that occurs when a vessel is removed from a hearth to a cooler atmosphere. An extremely high porosity, therefore, is expected in the archaeological ceramics.

Shale reacted much like the untempered control tile. Its' inclusion as temper might have been desired in an extremely porous vessel.

### THE ARCHAEOLOGICAL CERAMICS

The ceramics studied are body sherds recovered from excavations at the Tick Hollow and Muskeeta Cove II sites - each located in Glen Cove, New York. Body sherds often receive little attention in formal analyses because they lack diagnostic attributes. These, however, are probably more indicative of the functions performed of a vessel than are their rim sherds. Vessels used in cooking, for example, might involve the manufacture of a strong yet porous body to withstand the thermal shock associated with the continuous placement and removal of a vessel from a hearth. The manufacture of a rim, on the other hand, often being thinner and narrower in diameter, probably dealt with how these can be strengthened.

Archaeological evidence from the Tick Hollow Site suggests that the location was used year round, that many activities were performed at the site, and that a broad diet was employed. The ceramic assemblage represents occupations by peoples during the latter half of the Woodland Period. Surface treatment was of two kinds: cord-marked exteriors with smoothed interiors; and smoothed interior and exterior surfaces. Decoration was applied by means of incision and stamping.

The Muskeeta Cove II Site, on the other hand, was apparently used as a shellfish processing station during its latter occupation (Salwen 1968; Lightfoot 1985). Because activities performed here were very different

## Did They Know? (continued)

than those at Tick Hollow, differences in the ceramics are expected. The ceramic assemblage is representative of the entire Woodland Period.

The archaeological ceramics were first separated into categories defined by surface treatment, and then crosscut by temper material. Sherds were eligible for study as long as both surfaces were present and its weight exceeded five grams. Each category must contain at least five sherds.

### TICK HOLLOW CERAMICS

The Tick Hollow ceramic assemblage numbers 1383. Over half (738 sherds, or 53%) of these exhibited exfoliated surfaces and were immediately exempt from the study and the calculations presented herein. Of the remaining 645 sherds, Layer 1 contained 59 (9%); Layer 2, 536 (83%); and Layer 3, 46 (7%). The remaining 4 sherds (1%) were surface collected.

The use of mica schist as a tempering agent was restricted to ceramics which exhibited smoothed exteriors; it appeared in not one exterior cord-marked ceramic. Its use in the smoothed exterior ceramics, which occurs in context with Late Woodland pottery, increased with time: appearing in 8% of those Layer 3 ceramics, 19% of Layer 2 ceramics; and nearly 35% of Layer 3 ceramics. This same phenomenon appears in the diagnostic upper body and rim ceramics (11% of Layer 3; 14% of Layer 2; 60% of Layer 3). In fact, it was the sole grit agent used in the manufacture of the rather late ware commonly called "Eastern Incised (Smith 1950)." Unfortunately, these ceramics did not meet the requirements for inclusion in this study.

Sand was another temper material used in Tick Hollow ceramics. Unfortunately, this material too could not be included in the study. Sand has a long history of use in the area. At Tick Hollow, it appears in both the exterior cord-marked (6%) and smoothed exterior ceramics (7%); it

is not found in any of the diagnostic upper body and rim sherds. Clearly not popular as temper, the use of sand, like mica schist, increased with time. It appears in 4% of Layer 2, and 28% of Layer 1 exterior cord-marked ceramics. Similarly, it is found in 2% of Layer 2, and 31% of Layer 1 smoothed exterior ceramics.

Shale-tempered ceramics constitutes the most fully oxidized wares at Tick Hollow. It appears first in layer one, amongst the exterior cord-marked ceramics, climaxes

in layer two, after which it disappears from the stratigraphic sequence. Although present in layer two smoothed exterior ceramics (4% of these), shale was used primarily in layer two exterior cord-marked ceramics (8% of these, but 69% of all shale-tempered ceramics). It is found in 10% of the layer two diagnostic upper body and rim sherds.

Quartz and sodium feldspar appears solely in the exterior cord-marked body sherds (quartz does account, however, for 22% of the layer two diagnostic upper body and rim sherds), where each predominates in layer two.

Shell was clearly the popular temper material. Although its use drops to only 32% of all layer one ceramics, it appears in 71% of all layer two ceramics, and 72% of all layer 3 ceramics. (Shell also appears in 74% of the exfoliated sherds). Shell is found in 71% of all exterior cord-marked ceramics, 69% of all smoothed exterior ceramics, and 53% of all diagnostic upper body and rim sherds recovered from Tick Hollow.

The experimental tests presented earlier revealed that shell, when used as temper, made for an extremely porous ceramic body. Quite surprisingly, the mean porosity of the shell-tempered exterior cord-marked ceramics from Tick Hollow (28.07%) is lower than that for shale and quartz. Rye (1981) contends that shell was used exclusively in the manufacture of cooking vessels because of its ability to resist thermal shock. While the

	SHELL	QUARTZ	SHALE	SAND	FELD- SPAR	MICA	NOT KNOWN	SITE TOTALS
EXTERIOR CORD MARKED	251	45	31	22	6	0	0	355
Surface	0	1	1	1	0	0	0	3
Layer 1	8	10	0	7	0	0	0	25
Layer 2	228	34	24	12	5	0	0	303
Layer 3	15	0	6	2	1	0	0	24
EXTERIOR SMOOTHED	131	0	6	13	0	39	0	189
Surface	0	0	0	0	0	0	0	0
Layer 1	10	0	0	9	0	10	0	29
Layer 2	110	0	6	3	0	28	0	147
Layer 3	11	0	0	1	0	1	0	13
DIAGNOSTIC UPPER BODY AND RIM SHERDS	53	19	9	0	0	16	4	101
Surface	1	0	0	0	0	0	0	1
Layer 1	1	0	0	0	0	3	1	5
Layer 2	44	19	9	0	0	12	2	86
Layer 3	7	0	0	0	0	1	1	9
SITE TOTALS	184	64	45	35	6	55	4	645

TABLE 1: TICK HOLLOW DISTRIBUTION OF CERAMIC TEMPER MATERIAL BY SURFACE TREATMENT AND LAYER



## Did They Know? (continued)

experimental data would support Rye, the archaeological data from Tick Hollow would not.

What emerges from the Tick Hollow data is an awareness that these people knew of the destructive potential of shell as temper and altered the firing process to avoid it. To obtain the porosities that were achieved for shell, firings must have been for either relatively short periods of time with enormous heat, or for longer periods at lower firing temperatures. (Remember, the experimental tiles were fired at a high level so as to recreate the rapid rise in temperature of prehistoric firings. All shell-tempered tiles fired above 750 degrees C crumbled). Oxidation was never fully achieved. If firings were consistent for the different temper classes, the porosity of shell, even at the low porosity that was achieved, should have been higher than the other temper classes.

The porosity for shale-tempered exterior cord-marked ceramics (35.61%) seems to agree with the experimental data. Shale, when used as temper, makes for an extremely porous vessel. Densification occurs at a relatively low temperature, but is spread over a relatively large temperature range. Changes by man in the firing process would not significantly alter the porosity of a shale-tempered vessels.

The porosity of quartz-tempered exterior cord-marked ceramics (30.58%) was not surprising. The experimental tests revealed that quartz, in fact all silicates, consistently prompted a lower and relatively stable porosity over a broader temperature range.

Because shell-tempered smoothed exterior ceramics were also available for study, differences in surface treatment and how this might affect porosity can be discussed. The sherds in this category revealed a mean porosity of 31.27% - higher than that for shell-tempered exterior cord-marked ceramics, but still lower than what was expected. Again, because the experimental observations were not recreated here reinforces my belief that the potters knew of the destructive nature of shell as temper and altered their firings to avoid destruction.

The final test with the Tick Hollow ceramics determined how porosity differed in respect to physical sherd location in a vessel. An "East River Cord Marked" vessel fragment was separated into the three sherds it comprised. The vessel is 4 mm thick at the lip and widens to 7 mm at 10 mm down the vessel body. After this point, the average thickness of the remaining two sherds is 6.9 mm. The porosity of the rim sherd was determined to be 25.21%; that of the adjacent fragment, 28.95%; and that of the fragment furthest from the rim, 29.63%. Porosity decreased by 18% from the rim to the deepest body fragment of this vessel, a distance of 58 mm.

### MUSKEETA COVE II CERAMICS

In marked contrast to the Tick Hollow Site, 96% of all ceramics (excluding the exfoliated sherds) were tempered with grit. Quartz was used as temper in over 90% of the grit-tempered ceramics. Lesser grit materials used include sand (10%) and shale (2%). Shell is found in only 4% of the ceramics recovered from Muskeeta Cove II. The

singularity of temper material contrasts markedly against the many forms of surface treatment and design elements found at the site.

The ceramics discussed here are the same types that Salwen (1968) established. "Owasco Corded Horizontal" was not included because I could not find them. "Sebonac Stamped" is also excluded because these are defined by decorative elements restricted to the upper body and rim sherds.

In general, porosity is rather stable between the types represented. The earliest ceramics in the Northeast, "Vnette Interior Cord Marked" and "Modified Interior Cord Marked," reveal a mean porosity of 25.02% and 27.58% respectively. An increase in porosity is observed for "North Beach Net Marked." Whether this increase is attributable to surface treatment or firing is not known. The "Clearview Stamped" ceramics reveal a mean porosity of 27.58%. Other than the observation that these sherds are well oxidized, no illuminating insight is observed.

The final category is the exterior cord-marked ceramics. These are the only ceramics common to both the Muskeeta Cove II and Tick Hollow sites. The mean porosity of these sherds is 26.39%, lower than that established for Tick Hollow.

In summary, the consistency in porosity between each of the categories is probably attributable to the stability of quartz as an inclusion. The extent to which surface treatment affects porosity is not known. The use of quartz as temper during the earlier stages of ceramic technology was probably a result of both an unfamiliarity with how other temper materials react in clay, and the reliability of quartz.

### CONCLUSIONS

If Fowler's (1959) assessment that the many forms of surface treatment associated with the earliest ceramics were the result of experimentation is correct, then the focus apparently shifted at some point during the Middle Woodland. At this time we see the greatest diversity in the selection of temper materials.

The observed increase in the use of shell as temper is undeniable and perhaps even significant. Shortly after AD 1100 the economy shifted to intensive agriculture (Salwen 1975). This date closely approximates the first use of shell as temper. Initial experiments probably met with devastating results as potters watched vessels crumble before their eyes. Why would further experimentation, and later near total reliance, continue with shell when these results were rarely obtained, generally speaking, with quartz?

It has been suggested elsewhere that shell, because of its porous nature and ability to withstand thermal expansion, was used as temper for cooking vessels (Rye 1981). The experimental data in this paper would support this. The archaeological data from Tick Hollow, however, does not. In what role did shell-tempered ceramics at Tick Hollow function? Cooking? Storage? Drying?

These questions were not answered in this study. I do believe the data indicates that prehistoric potters were both aware of the destructive nature of shell, as well as the properties of other materials, and were able to alter the firing process to accommodate specific vessels.

Porosity is a difficult property to study. The archaeological ceramics represents an array of clay deposits; each affecting porosity in different ways. Porosity is dependent on the amount of temper added to the clay. Porosity also varies within one vessel. So too, the vessel's location during firing must be considered.

Ceramic analyses need to address ceramic technology. We must examine other ceramic properties (such as strength, resistance to shock, wear patterns, etc.) and begin to tie this data into spatial and temporal contexts.

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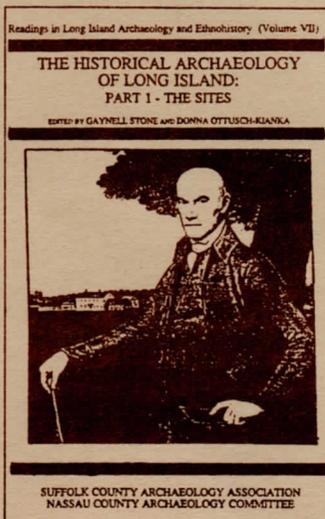
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The Archaeological Society of Connecticut will hold their Fall meeting on Saturday, November 7 at Norwalk Community College in Norwalk, Connecticut. If interested in attending, then send mail registration fees (\$3 for ASC members; \$5 for non-members) to: NCC Archaeology Club, Room 909, Norwalk Community College, 333 Wilson Avenue, Norwalk, Ct 06854.

Suzan Smith Habib is offering an historical archaeology field school course during the spring semester at Southampton College. The early Southampton village house which is to be investigated will be restored after field work is completed. For more information, call John Strong at (516) 283-4000 during daylight hours and at (516) 283-4338 during evening hours.

A special guest will speak at the next SCAA meeting on November 12. Archaeological fieldwork at the former Havens Estate in Center Moriches (a cooperative effort by Queens College and SUNY Stony Brook) will be the topic of discussion. SCAA meetings are held at Hoyt Farm Park (located on New Highway in Commack). Please do come!

**PLEASE REMEMBER TO PAY YOUR SCAA MEMBERSHIP DUES**



**What the LONG ISLAND FORUM says about SCAA's latest publication, The Historical Archaeology of Long Island, Part I - The Sites:**

"The latest publication in the "Readings in Long Island Archaeology and Ethnohistory," stands up in every way to the splendid volumes previously issued {see Page 8}... The expertise in layout and general editing of Gaynell Stone is apparent as is and the enthusiasm of the co-editors in the cause of collecting and preserving through publication."

Volume VII is available to SCAA members at a cost of \$27.20, and to non-members at \$34.

## PUBLICATIONS OF THE SUFFOLK COUNTY ARCHAEOLOGICAL ASSOCIATION

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SCAA NEWSLETTER Volumes 1 - 12 (Back Issues)	\$ 5.00/vol	\$ 4.00/vol
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All publications may be purchased from SCAA at the prices indicated. SCAA prices include postage paid for handling and delivery. Publications may also be purchased from local museums.

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SCAA MEETINGS ARE HELD AT HOYT FARM (located on New Highway in Commack, New York). The General Meetings begin at 8:00 P.M. (arrive earlier to discuss education business). The next meetings are scheduled for **November 12 and December 10.**

----- MEMBERSHIP APPLICATION -----

Membership in SCAA includes three Newsletters per year and a 20% reduction in workshop and publication costs. All contributions are tax-deductible.

STUDENT (up to age 18) \$5	INDIVIDUAL \$10	FAMILY \$15
SUSTAINING \$25	CONTRIBUTING \$50	PATRON \$100
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