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SWEET-MEADOW BROOK: A POTTERY SITE IN RHODE ISLAND

By William S. Fowler

* Illustrations are by the author.

Preface

When it became known through tests made that this site contained not only stone implements, but numerous potsherds as well, excavation of it seemed highly desirable. Occupational sites containing ceramic evidence in abundance are of such infrequent occurrence in New England as to make the very mention of one waiting to be excavated the cause for much anticipation.

The Narragansett Archaeological Society of Rhode Island is indebted to Birger E. Anderson, one of its members, for locating and proving the site. Also, grateful thanks are due Miss Mabel Curtis, owner of the land, who realized the importance of archaeological research and granted the Society permission to excavate and retain title to all recovered artifacts. Mention should further be made of the conscientious support of many Society members, who, excavating through all kinds of weather to recover data, have made this report possible.

Satisfactory results have been experienced due to the high frequency and variety of artifacts the site yielded. Of considerable significance was the presence of shellfish refuse, which was strewn throughout the upper levels of occupation. Lime leaching from these shells over the years has helped preserve organic bone remains as well as potsherds. These tend to disintegrate and disappear on sites where shell is not present because of the acid condition of most soil.

Pottery relics in whatever part of the globe they may appear have furnished archaeologists a reliable means of identifying various stages of cultural development, because ceramic improvements accompany the passage of time. Therefore, because of the relative high frequency of potsherds at the site, the work of excavation was focused upon their interpretation with reference to their relationship to all other evidence. Due to this study, it has been possible to allocate certain definite ceramic changes to different development stages, to be referred to later. However, it may be said here that while aesthetic modifications were not found to be as ornate and varied as in some regions of the country, they were sufficient to indicate the same human impulse at work, as found the world over, to create ever better and more beautiful products.

The Site

On the northerly side of the town of Apponaug, Rhode Island, occur several sandy elevations. One of these extends on a north-south axis along a small spring-fed brook, which empties into Apponaug Cove, a part of Narragansett Bay (see map). Today, there is a small pond a short way up the stream, which appears to occupy a natural swampy depression. In prehistoric days it is probable that this body of water was somewhat enlarged, impounded as it may have been by a beaver dam at its mouth; many beaver incisors occurred in the shell refuse of the site, which contained remains of oysters, quahaws, sea clams, small clams, scallops, whelk, and stout razor clams. Elevated above the pond lies an elongated sand deposit. It rises some eight or ten feet from the water, levels off for about sixty feet, then rises again another ten feet to its summit. This formation is what is known as a sand terrace. It afforded early man a favorable location for a camping place with fresh water conveniently near. As evidenced by concentration of camp refuse including shellfish remains, occupation extended over an area two hundred and eighty feet long by twenty feet in width at the narrowest place, which increased to sixty feet on the northerly end. Lying as it did at the head of the pond, it is likely that this small body of water served as a desirable mooring place for dugouts, well out of sight from the salt water cove. The sand ridge along the westerly side would have provided suitable protection from the prevailing wind. This, together with other advantages must have made this location a favorite place over a long span of years.

Historically, the land upon which the site rests may have belonged originally in 1685 to a man by the name of Sweet, from whom the sandy meadow takes its name. For in 1735 the Surveyor's Plat refers to the Apponaug four mile common as lying between Sweet's meadow and Apponaug bridge. At any rate, sometime later between 1790 and 1875 the land was owned by Capt. Daniel Brown. By then, the site brook which flowed through it was known as Sweet-Meadow Brook, evidently a contraction of Sweet's Meadow, from which the site derives its name. However, the historic event which more than any other probably altered somewhat the surface of the site was the laying of the first Boston to New York railroad. Today, the N.Y.N.H. & H.R.R.
line runs where the first track was laid just west of the site, only a few hundred feet distant on a north-south axis. Here in 1837 the old Stonington & Providence Railroad, commonly known as the Stonington Road, opened for travel. For several years prior to this it was under construction by hand-shovel and wheelbarrow labor, and it is likely that the terrace site beside fresh spring water would have been as attractive then for a camp as in earlier days. Review of contact artifacts found for the most part in the upper six inches of the excavated area seem to suggest occupation by railroad gangs. The workmen may have lived in huts; kept a few chickens; and worked small garden patches to help provide them with food. Among the recovered contact artifacts appear: T.D. white clay pipe fragments marked 78 W. White Glasgow—(T.D. kaolin pipes were first made by W. White in Glasgow, Scotland in 1801; later on manufacture of them was continued by Davidson); a copper Roman Catholic religious charm dated 1830; an iron spoon; one railroad spike; part of a china egg and scattered pieces of coal which might indicate chicken raising; numerous cut nails; strap hinge pintles for hanging doors; and a handmade copper wire door hook. These remains may be from the railroad gangs. Other historic artifacts suggest earlier or later contacts: hand-wrought nails; oxen shoe; glass bottle fragment marked SNUFF; white porcelain keyhole escutcheon, similar to those made in Bennington, Vermont about 1850; glass bottle fragment stamped 1871; and an old style buttonhook and key ring.

FIG. 1—Sweet-Meadow Brook Site showing excavated area and profiles of strata.
It is important to keep in mind the erosion which occurred after the prehistoric occupation had ended (see illustration). Study of the east-west profile shows how sand and gravel from the upper sand bank of the terrace spilled down and covered about half the formerly occupied area. In this fill appeared contact artifacts of historic days, which suggests that both were contemporaneous; erosion could not have taken place during aboriginal occupancy since prehistoric artifacts were confined to an undisturbed stratum just below.

The work of excavation required two seasons to complete. During 1954 and 1955 there were 12,240 square feet excavated with total recovery of 2,267 artifacts. This assembly contained only those articles which could be identified; did not include fragments of implements which had no significance. Furthermore, it contained single recordings only of groups of potsherds found more or less together, when they had similar traits attributable to the same pot. While this system reduced the number of recordings probably by several thousand, it enabled more efficient evaluation, and in the case of pottery, has provided a clue to the number of pots represented in the collection.

Archaeological Stratigraphy

As may be seen from the illustrated profiles, the site was covered with shell refuse and camp litter, including potsherds, representing the last aboriginal occupation by people who ate shellfish and made pottery. What seemed at first to be a troublesome irregularity was the fact that this upper occupational stratum varied in depth from some twenty inches on the east side of the site to nothingness on the west. The method by which recording of artifacts from this layer was adjusted to depth variance will be explained in the next chapter. That which did remain well defined and more or less constant over the entire excavated area was the line of demarkation indicating the bottom of the shell-filled stratum. Organic refuse had turned it black and thus had made it discernible. Formed not by a plow but by natural deposition of refuse over an irregular sand floor, it was wavy with no well defined line from which to measure. However, presence of crushed shell reaching down to it helped to locate it at all times. For the sake of convenience this level is called "junction" or the approximate line where the shell overburden ends and sand begins. A span of 1 to 2" has been allowed for its variation.

A lower occupational stratum with no shell or potsherds occurred in the sand just below the shell layer. Here, people had lived who ate no shellfish and made no clay pottery. Instead, evidence shows that they made stone bowls. These separated economic activities clearly divide the remains into two horizons: one, stone bowl-nonshellfish eating; the other, ceramic-shellfish eating. From this it seems possible to recognize three culture zones determined by the chief product of each: Lower Zone—end of the Stone Bowl Age when cooking and eating vessels were made from stone; Middle Zone—beginning of pottery making with Stage 1 pottery; Upper Zone—exuberance of pottery construction with Stages 2 and 3 pottery. Because Stage 3 pottery represents only a short span in the upper part of the Upper Zone, it has not been zoned into a separate period of expansion. For it seems more properly to exhibit a short creative phase of Stage 2 at the end of years of trial and error, before pottery design attained its peak development in Stage 4 times. However, although it has not seemed advisable to establish a separate culture zone for Stage 3 pottery, its position always at the top of the Upper Zone together with certain marked changes in shape and design treatment cause it to be considered in a class by itself.

Methods of Excavating and Recording

The grid system with six foot squares was used. Grids were laid out starting from a base line running along the rim of the terrace nearest the brook and pond, which happened to be on a north-south axis. Excavation was carried forward systematically one row of squares at a time until the western extremity of the site was reached. The work was performed by scraping with suitable tools, and was confined to a foot and a half bench the full width of a grid. This bench was worked down keeping strata profile exposed to view at all times. In recording, the English long measure system was used. The vertical position of artifacts was recorded on paper forms by listing two measures: distance from artifact to top of the ground; and distance from artifact to junction. Then by recording the stratum in which the artifact appeared, its exact vertical position was established. Proceeding thus, the profile was automatically recorded every time an artifact was measured. Hence at all times exact relationship of artifacts to junction was known. Therefore, the junction became the base line to which all evidence
was tied. Also, the artifact was located horizontally in the grid where found.

Finally, in transferring each artifact and its position to the master coordinating sheet, a method of reconciling the wide variation in depth of the upper horizon had to be found. It was assumed that the whole occupational area was affected more or less simultaneously by natural and human forces; that as refuse accumulated it tended to fill low areas faster than high ones. Now, as the terrace had a gentle slope toward the brook, that part of the site nearest the brook received a deeper fill than the higher western side. From this it seemed obvious, for example, that an artifact found half way down in twenty inches of accumulation on one side of the site should have approximately the same age as one found half way down in only two inches on the other side. Therefore, to obtain the true relationship of artifacts to each other in point of age seemed to be a question of ratio in which only relative positions mattered. The problem was thus reduced to one of proportion in assigning any given artifact to its relative position. To accomplish this result, the upper horizon of the master sheet was divided into quarters, each being subdivided into halves. Then, it remained but to allocate each recorded artifact from this horizon to the half of whichever quarter in which it was found to belong, after its vertical position had been established by ratio from the field records. Those artifacts appearing in the lower horizon were not affected similarly, because no great occupational depth variation existed to upset vertical measures. Further, in this lower horizon, artifacts of the preceding Early Archaic were absent except one corner-removed #5 broken spear point—probably a stray from that earlier age. Therefore, it was assumed that but one culture was represented in this lower stratum.

After noting the position of Stage 1 potsherds at the junction, culture zones were established within the following measures: Lower Zone—below junction in sand; Middle Zone—junction to middle of first quarter; Upper Zone—middle of first quarter to top of occupational overburden. This proportional method of distribution proved to be sound since large triangular projectile points believed to belong to the last cultural uplift were always found in the upper culture zone regardless of whether they occurred in two or twenty inches of shell-filled overburden. Also, potsherds fell into respective positions with their development stages; were not mixed. This seemed to imply that other artifacts tended to be correctly located also.

## Disturbances

Recording to be reliable must depend, it would seem, upon a minimum of disturbance over the area to be studied. Therefore, a word might be helpful about disturbances which were noted over the excavated plot. First, it should be observed that there was no sign to indicate that the land had ever been plowed. This fact eliminated one cause of artifact mixing usually common to most sites. How-
ever, relic collectors in the past had dug superficial holes here and there. Then there was a shallow excavation as if for a small shed at one spot. One or two places looked as though posts had been sunk in the soil. There was evidence in the first six or seven inches to indicate probable occupation by railroad hands when the Stonington Road was put through. Luckily, this historic disturbance did not intrude the western half of the plot. Here, as has been shown, aboriginal remains had been covered by eroded fill to a depth sufficient to absorb later day disturbance.

However, long before historic days during aboriginal occupancy several other kinds of disturbance had taken place. Chief among them was that caused by pits, which were dug to take care of surplus food refuse. In this waste were found not only shell but bone fragments mostly from deer, while in one pit were the remains of a bear. These pits were present everywhere, of which 229 containing artifacts were recorded. All told there probably were double this number. Evidence showed them to have been the means by which some artifacts were accidently raised from lower levels. Generally speaking there was always a greater chance of disturbed artifacts moving up rather than down. For to move downward an artifact would have had to fall down a hole such as that made by a rodent or larger animal, of which there were but a few. The possibility of dislodgment continually had to be kept in mind, and discounted whenever an artifact appeared out of context by virtue of its being in proximity to a pit. While pits were troublesome in this way, they were valuable in suggesting the period of deposition of the artifacts they contained. For the age of any pit including its contents is determined by its level-of-origin, or in other words its top. At this site, pit levels were not systematically destroyed by plowing; could be easily identified by virtue of shell refuse in the pits being less crushed than that round about. Therefore, the fact that 20% of all recovered artifacts, including potsherds, occurred in refuse pits helped stabilize respective positions of different implement types in the three culture zones. Seven burials were encountered, but because of the comparatively small number, their disturbance of artifacts was negligible.

### Occupational Evidence

**STONE HEARTHS.** The best indicator of family occupation at any site is the presence of stone hearths; 28 were found in situ. Evidence suggested there had been others which had become demolished in early times. Fire stones were scattered throughout both horizons, indicating many fires and rather extensive occupation. It is interesting to note that for some reason or other more hearths remained intact in the sand of the Lower Zone than anywhere else. Of the 28 hearths, 23 were in the Lower Zone, 3 in the Middle Zone, and 2 in the Upper Zone. In nearly all cases their construction consisted simply of small groups of stones loosely thrown together. However, in several hearths stones had been seemingly fitted together to form apparent fire pits, although they were shallow and not well defined for the most part. A small one in the Middle Zone had its stones arranged as if to support a clay pot.

**REFUSE PITS.** Mention has been made of the 229 pits in which artifacts appeared, and of the method of determining their origin. Of several pits appearing in the Lower Zone, these alone were without shell, while only one contained an artifact—a pipe-bowl reamer. The Middle Zone had 40 pits, of which 17 contained Stage 1 potsherds. The Upper Zone had 188 pits, of which 65 contained Stage 2 potsherds, while 8 others whose level-of-origin was near the top of the zone contained Stage 3 potsherds. Altogether, they produced 20% of the total number of recovered artifacts as previously stated. There was no uniformity to these pits, some being small, others large with varied depths depending apparently upon the amount of refuse to be disposed of.

**BURIALS.** During the excavation there were 7 burials exhumed, of which one furnished a Carbon-14 measure referred to in detail in the next chapter. In general, all had their origin in the Middle or Upper Zones except a dog interment.

*Burial 1* held the remains of a dog whose bones were badly disintegrated. However, lime leaching from shell refuse above had preserved enough of the skeleton so that it could be identified as the remains of a fairly large wolf-dog. The grave shaft contained no shell and its origin was in the Lower Zone.

The remaining six were human burials of which the skeletons were flexed. Cranial remains of the first two were kindly examined by Dr. Edward E. Hunt, Jr., Staff Anthropologist at the Forsyth Den-
FIG. 2—Burial #2—female 20 yrs. Showing intrusive pit containing 11 sherds from same pot, with its level of origin in early part of upper zone.
Burial 2 (Illustrated) contained the skeleton of a female adult with food offering of which a Carbon-14 measure was obtained; details to follow.

Burial 3 was that of a male adult, age between 50 and 55 years. A large potsherd, stick-wiped inside and cord-marked outside of Stage 2 pottery, was found in the grave shaft; its level-of-origin appeared in the lower part of the Upper Zone. Apparently, this man had survived a violent blow in the face, since many teeth were missing from his upper left jaw which had completely healed. His features were typically aboriginal; cranium was mesocephalic (medium) with cephalic index of 78; mastoid processes were not enlarged. There were no grave goods.

Burial 4 held remains of a male adult. Its origin was obliterated by several refuse pits which intruded. However, it may be assumed to have belonged to the Upper Zone, since the grave shaft contained much shell. The cranium was dolichocephalic (long headed) with cephalic index of 73; mastoid processes were not enlarged. There were no grave goods.

Burial 5 contained the disturbed bones of an adult, sex undetermined. The skeletal matter was badly disarranged. Apparently, the body had been thrown into a refuse pit with much animal bone and shell waste. The lower jaw had been hit on one side by a blow which had knocked out many teeth, after which it had healed, indicating survival. The interment was rather shallow, which may account for the body's crushed condition. The pit's level-of-origin lay in the middle of the Upper Zone. There were no grave goods.

Burial 6 revealed the bones of a child, possibly 6 years old. Interment appeared to be in a refuse pit, whose origin was at the bottom of the Upper Zone. The bones appeared crushed; there were no grave goods.

Burial 7 was a multiple interment containing remains of a male and female adult, a 4 year old infant, and a dog. Bodies of all had been laid closely together one over the other. The grave shaft contained much shell refuse, and had its origin at the bottom of the Upper Zone. Potsherds of Stage 2 pottery were present which confirmed its zoning position. The female cranium was crushed but that of the male was dolichocephalic with cephalic index of 73. Male mastoid processes were not enlarged, while those of the female were slightly enlarged. Grave goods placed at the foot of the bodies consisted of 7 small triangular points, 1 eared point, 1 bone awl, 2 sinew-stones, 1 tool for smoothing pottery, 1 beaver incisor, and a steatite pipe bowl fragment, probably intrusive.

There appeared to be no uniformity as to the direction in which the interred bodies faced, except that in general they seemed to lie on a north-south axis. Burial 2, alone, showed intent to have the body face east. This together with the votive food offering in this interment seem to suggest greater spiritual faith with closer observance of approved funeral rites than is shown by the later burials at the site.

Radiocarbon Measure

Burial 2 presented certain interesting features, which made a careful investigation of its age seem worth-while. (Illustrated). The interment was that of a 20 year old woman whose flexed skeletal remains were in a fair state of preservation as a result of lime leaching from shell refuse in a pit intruding into the grave shaft. The cranium was dolichocephalic with cephalic index of 72. Teeth showed considerable wear, and mastoid processes were appreciably enlarged, indicated a life-long custom of carrying burdens on the head. The grave shaft was oval; measured about 24 x 31", and had a depth of 26" penetrating the sand. Its level-of-origin was indistinguishable because of intrusion of refuse pit #75, which had obliterated all traces of the grave's surface. However, the pit's origin was found to lie at the bottom of the Upper Zone, therefore, at the start of Stage 2 pottery making. Now, it may be assumed that the grave was dug before shellfish refuse had accumulated to any great extent, since its shaft contained only a small amount of crushed shell. Its shallow interment with only a little more than two feet of covering suggests that for some time after burial the body had much less covering, perhaps not more than a foot in depth. Hence it lay on the terrace without protection, exposed to rain water infiltration at all times.

A votive food offering was placed in front of the skull just below the refuse pit as shown in the illustration. It consisted of the remains of a shoulder of venison and breast of wild fowl; the latter
item apparently had been cooked. This food was covered for protection from the sand by nine oyster shells, 8-9" long. They were stacked one over the other like shingles, with their backs turned up. In the intrusive refuse pit were found eleven potsherds from one vessel. As will be noted from the illustration, these sherds represent ware which is cord-marked outside, slightly stick-wiped then finger-smoothed inside, and is from a pot with a straight neck. It has coarse mineral temper, measures 1/4-5/16" in thickness, and exhibits uneven finger smoothing. Separation along horizontal seams where coils have come apart shows structural weakness in this department. It has all the traits of Stage 1 pottery except it is finger-smoothed inside instead of cord-marked. Because of this, there is good reason to speculate that it represents transitional ware at the start of Stage 2 pottery; also suggested by the origin of the intrusive refuse pit, as being early Stage 2.

Obviously, the grave was dug before the pit, but how many years separate them is not known. However, since the custom of shellfish eating was well established at the time of burial as evidenced by the oyster shell covering to the food offering, interment probably took place not too long before the intrusive pit was dug, which should make it transitional between pottery Stages 1 and 2. Furthermore, this seems to be supported from the fact that the grave shaft encompassed the intrusive pit; was not found to have its level-of-origin separate from or below the pit in an earlier age. Therefore, while there must have been an interval of time between the digging of grave and pit, it may not have been more than about 50 years.

In order to get some idea when all this happened, an oyster shell sample from the votive offering was submitted to the Lamont Laboratory for a Carbon-14 measure. Dr. Kulp returned a radiocarbon date of 800 ± 80 years B.P. (before present)—Lamont Sample No. 270. Using the maximum number of years of this measure gives a date of 1076 A.D. However, as pointed out by Dr. Charles B. Hunt, executive director of the American Geological Institute in the Scientific Monthly, Vol. 81, No. 5, there exists reasonable doubt as to the accuracy of radiocarbon measures of organic matter taken under certain conditions. On page 244 he says: "The dates from dry environments conflict with those from wet environments. Of the two sets I prefer the set from dry environments because these samples have been preserved under conditions most like those of the Egyptian tombs, which gave highly satisfactory age determinations. The samples from wet environments, in my opinion, are highly suspect because such environments favor contamination by younger, intrusive matter." Referring to heat and moisture as causes for contamination, he says: "Contamination would be greatest in humid temperate regions where the environment favors biochemical activity and replenishment of Carbon-14 in the subsoil, and it should be noted that a large proportion of the dates that many geologists suspect are "too young"—represent samples from humid temperate regions." He concludes by saying in part: "Determinations on samples of organic matter that have been subject to contamination by soil solutions transporting soluble organic compounds or by bacterial and fungal attack must remain suspect until some way is found for determining whether this kind of contamination is or is not a significant factor."

It would seem that the shell sample from Burial 2 and its environment fit Hunt's conditions for contamination by microorganisms bearing new Carbon-14; the shallow grave, as has been shown, was subjected to intermittent seepage of rain water in a humid and temperate climate. Hence, Kulp's date of 1076 A.D. could well be too young. However, this does not mean a drastic modification should be made, for shell is less subject to decomposition and subsequent contamination by Carbon-14 bearing bacteria than are certain other organic substances, such as wood. Nevertheless, the sample was badly pitted in places and showed signs of some decomposition. Consequently, it might be safe to assume it had suffered some contamination, and hence had a greater age. This might push the date back to perhaps 900 A.D. On this basis, a date of 950 A.D. at a point about half way between would seem to suggest a safe compromise for the age of the burial, which suggests 1000 A.D. for the transition from Stage 1 to Stage 2 pottery.

Using this probable date, it is now possible to compute the various periods of pottery development, (see chart). Comparing the number of recorded potsherds recovered, it seems revealing that there were 130 of Stage 1, 135 of Stage 2, and only 18 of Stage 3 ware. Therefore, it may be argued that concentration of Stage 1 was almost equal to that of Stage 2, which might give it equal status in point of time duration. However, during the first
stage of pottery making it is likely that fewer pots were made, so that, all else being equal, a longer time could have elapsed for Stage 1 than for Stage 2. With this in mind, and judging from the comparatively few recordings of Stage 3 ware, it may be assumed that this latter stage had a short duration. Now, since no sherds of known historic pots were recovered, it seems likely that the site was abandoned before 1600 A.D., the date when Stage 4 began. Thus it is possible to establish suggested dates with the advent of ceramics set at about 500 A.D. The Stone Bowl Age (Late Archaic) was a long preceding one, of which only the latter part is evident at the site, as will be seen in the next chapter.

Industries

STONE BOWLS. As far as may be determined by comparison of stone materials of recovered bowl fragments, there are at least three different bowls represented from this industry. Two are made of steatite and one of chlorite. More than 80% of the fragments were found at the junction, or just below in yellow sand. The balance was apparently out of context in the shell stratum. A large portion of these fragments were found to belong to one steatite kettle measuring about 15" in length. It was beautifully finished by scraping and was thinned to an unbelievable 3/32" in some places. However, there were insufficient pieces to permit restoration. While recovering some of these fragments it became clear how a few had found their way to the surface from the junction. First, two small contiguous fragments were discovered at the top of the shell stratum lying above and near a refuse pit which extended into the sand. Further excavation uncovered a large fragment lying just under the junction, near, but outside the pit. When this was found to be contiguous with the first two pieces, it became clear that the latter had been lifted from the junction, accidentally, by whoever dug the pit during the ceramic period of occupation.

From this revelation it would seem that stone bowls were being used at the beginning of the Middle Zone times. However, their number was few, which probably indicates that there were no replacements. If this is so, then it should follow that those which did appear were being used as heirlooms at the time of their breakage. In the Lower Zone occurred steatite industrial tools in the form of end picks, which suggests source of stone bowls in the lower horizon in the Stone Bowl Age. However, due to the scant evidence of broken bowls at this low level, it is probable that only the end of the period is represented there.

STONE PIPES. The stone pipe industry appears to have had its roots in Lower Zone times, for the first evidence of pipe making appears in the sand stratum. It was here that a pipe blank of steatite and a pipe-form of chlorite (Illustrated) were found. Work on the latter had advanced far enough to indicate that a straight pipe was intended. Since this kind of pipe with horizontal bowl was the original type in the development of pipes in the Southwest, it seems in keeping that it should have been found in the earliest culture zone at the site. However, it was not the only style manufactured in Stone Bowl times for the steatite pipe blank found deep in the sand suggests a platform pipe was intended.

Platform pipes continued to be made in early ceramic times as evidenced by a beautifully finished specimen with stem missing found in a refuse pit whose origin was in the Middle Zone, (Illustrated). Pipes of this type have their bowls projecting at right angles to the stone stem, located about half way between the ends; many specimens in all stages of construction have been recovered from the Oaklawn steatite quarry only about five miles distant. The exhibited specimen has an unusually wide flange at the top of its bowl. It projects about 3/8" at both ends and 3/4" on the sides to form an elliptical top. One platform pipe-form and broken sections of such pipes in the making occurred in the Middle Zone, which seems to support the belief they continued to be made during early pottery times. Only one specimen occurred in the lower part of the Upper Zone, which may represent overlapping or displacement.

Elbow stone pipes were first found in the Middle Zone. Pipe-forms and broken sections made of Oaklawn chlorite were recovered, one of which shows the preliminary reaming of its bowl (Illustrated). The drilled hole is 1/16" deep and tapers from 3/8" to 3/16" diameter. Evidently the perforation was done with a stone reamer of small proportions. Interior finishing is displayed by the platform specimen which shows vertical working. From this the technique of hollowing seems to have been: first, reaming by drill action, then enlargement and finishing by vertical abrasion and scraping. Evidence of
FIG. 3—Bone Industry. 1, 8, Beaver incisors; 2, Perforated handle—probably for incisor insertion; 3, 4, Pressure flakers; 5, Fishhook point; 6, 7, Needles; 9, 10, Ulna Awls; 11, Raccoon splanchnic; 12-14, Awls with handles; 15-27, Splinter awls; 28-33, Arrow points.
elbow pipe manufacture continued on into the first part of the Upper Zone. Chlorite served as the preferred stone for all except one specimen which was made of steatite. One broken stem had a knob projecting from the bowl’s bottom in line with the stem as if to indicate it had emerged from the platform type.

Finally, a perfect bowl-type pipe appeared in the middle of the Upper Zone (Illustrated). It is made of a fine grained black chlorite which differs from the dark green-gray Oaklawn coarser material of which the platform specimen was made. It closely resembles chlorite from a Stafford Springs quarry in Connecticut, where later day pipe manufacture may have been carried on. This finely finished specimen is the elbow type but without a stone stem. Instead, the stem is cut off where it starts to bend away from the bowl. Its cross section is diamond shape, and it is perforated by a 3/8” diameter hole with no taper. This larger hole suggests that it was intended for insertion of a short hollow reed or bone stem. Since evidence of this pipe style did not appear at earlier levels, it is probable that its advent occurred in middle ceramic times.

BONE IMPLEMENTS. Of the many artifacts of bone, illustrated specimens represent the best of those recovered. They exhibit the usual shapes as found in many parts of the country wherever bone implements are present. They first put in an appearance in shell of the Middle Zone, and they continued to occur throughout the Upper Zone, in the center of which their frequency was the heaviest. Arrow points were made from antler tines and bone fragments ground into shape and drilled when required. One well shaped bone handle is shown perforated to a depth of about an inch at one end. Its size just accommodates beaver incisors, a number of which were recovered, and it seems probable that they were hafted in this way. Bone awls were evidently important tools as their frequency was high and a well shaped one, specimen #12, occurred in the grave goods of Burial 7. It is thought that they may have served in the weaving of mats and baskets, also punched holes in skins preparatory to binding them together for clothing.

STONE IMPLEMENTS. Since certain stone tools have culture significance because of the level at which they have appeared, an account of this industry as revealed at the site seems advisable. Projectile points will be considered first, using class names as approved by the Massachusetts Archaeological Society, commencing with types appearing in the Lower Zone. The 951 points recovered are divided into 13 different types; are made of stone materials, listed in order of their frequency: quartz, quartzite, felsite, argillite, flint, and Jasper. The last two are not indigenous to New England; probably were imported as stock or finished points from New York State and Pennsylvania. This classification groups all stem points less than 1 1/2” in length in the small stem category.

Corner-removed #5, (Not illustrated). Only one specimen of this style appeared, low down in sand of the Lower Zone. It has a narrow stem slightly bifurcated, which is constricted from a relatively wide blade; is presumed to be a stray from the preceding Early Archaic Age since no other evidence of this period occurred.

Corner-removed #7, (Illustrated). There are 6 specimens of this type. It has a relatively broad blade with truncated stem, formed by removal of basal corners. These points were present in the Lower and Middle Zones.

Eared, (Illustrated). Of this style there are 38 specimens. It exhibits side-notched traits except that in addition the base is carefully worked, often slightly concave, to form basal pointed corners which protrude like ears; size may be either small or large. Concentration was heavy in the Lower Zone and overlapped into the Middle Zone. A few specimens seemed out of context in the Upper Zone.

Leaf, (Illustrated). Of this form with lanceolate rounded base, there were 13 specimens recovered. They occurred equally in all zones.

Tapered Stem, (Illustrated). There are 15 recoveries of this type with stems which taper to truncated bases. They occurred equally in all zones.

Diamond, (Illustrated). This form may be related to the tapered stem. Its basal sides taper to a point to form a diamond shape. There were 12 specimens distributed through all zones.

Corner-removed #3, (Illustrated). Appearing throughout all zones were 79 specimens of this style. With basal corners removed to form a stem, it has a relatively narrow blade with the base usually slightly worked to leave it irregular, and in some cases with thick proportions.
FIG. 4—Lower Zone—close of Stone Bowl Age. 1, Grooved gouge; 2, Celt; 3, Grooved ax; 4, Club; 5, Oval scraper; 6, Shaft abrader; 7, Plummet; 8, End pick; 9, 29, Pipe-bowl reamers; 10, Stemless knife; 11, Straight pipe-form; 28, T drill; 30, Plain drill; Points: 12-15, Small stem; 16-20, Side-notched; 21, 22, Small triangular; 23-26, Corner-removed #3; 27, Tapered stem; 31, 32, Corner-removed #7; 33, Diamond; 34-38, Eared.
Side-notched, (Illustrated). This type, of which 47 specimens were recovered, has varied shapes; occurred equally in all zones. Near the base opposing sides are notched sometimes broadly; occasionally only with small well defined notches. The latter occur usually on specimens made of flint, which are presumed to be importations.

Small Stem, (Illustrated). In this class are 83 specimens in irregular shapes, but all less than 1\(\frac{3}{4}\)" in length. Stems may be either corner-removed or tapered; often are ill defined. These points occur in all zones.

Truncated, (Not Illustrated). Only 2 specimens of this type were recovered, one each from the Middle and Upper Zones. It is characterized by a broad blade with more or less parallel basal sides which terminate in a truncated base.

Corner-notched, (Illustrated). This type is represented by 9 specimens, found only in the Upper Zone. It is distinguished by two opposing notches near the base, which intrude obliquely from each basal corner into the blade. Small and large in size, several were made of Pennsylvania yellow jasper; probably were importations.

Small Triangular, (Illustrated). By far the most popular point, this type is represented by 478 specimens in varying proportions; appeared first in the Lower Zone, became more numerous in the Middle, and reached heavy concentration in the Upper Zone. The type has a triangular shape with base which should measure less than 1\(\frac{3}{4}\)" in width to qualify.

Large Triangular, (Illustrated). In this group are 168 specimens, all from the Upper Zone except one that lay just below; was probably out of context. This type is triangular in shape; has a broad blade which should measure 1\(\frac{3}{4}\)" or more across its base.

From this study it may be seen that eared and corner-removed \#7 types are diagnostic of the Stone Bowl Age and overlap into Ceramic Stage 1, while corner-notched and large triangular types are diagnostic of Ceramic Stages 1, 2, and 3. Other recorded projectile point styles do not seem to be determinants of any culture period as they appear throughout all zones.

Grooved Ax, (Illustrated). This type of ax is pecked and ground; has a full groove extending about its head. Of the 3 specimens recovered, one was from the Lower Zone, the other two overlapped into the Middle Zone.

Grooved Gouge, (Illustrated). This implement is pecked and ground; has a half groove showing on its rounded back for hafting; its flat face is often slightly concave at its bit like a scoop chisel. There are 2 specimens which were found in the Lower and Middle Zones.

Celt, (Illustrated). In this class are 2 specimens, one from the Lower, the other from the Upper Zone. Traits resemble a plain ax blade with edge ground sharp.

Pipe-bowl Reamer, (Illustrated). This kind of drill has a relatively broad bit from 3⁄8 to 3⁄4" in width. There are 5 specimens, 4 from the Lower and one from the Upper Zone, indicating pipe making throughout all zones.

Eared Drill, (Illustrated). This type of perforator, of which there are 2, has a base with basal ears. Recoveries were from the Middle Zone.

T Drill, (Illustrated). This perforator has its base cut straight across. Recoveries were from the Lower and Middle Zones.

Plain Drill, (Illustrated). This perforator has a plain shank without a broadening base. The one specimen was from the Lower Zone.

Cross Drill, (Illustrated). The base of this perforator has an extended stem to form an irregular cross. The one specimen was from the Middle Zone.

Flake Drill, (Illustrated). This perforator is worked from a flake which forms an irregular base. There were 8 specimens; were from all zones.

Crescent Drill, (Illustrated). This type of perforator has a base shaped more or less like a crescent. There were 19 specimens from the Upper Zone; 2 specimens from the Middle Zone may have been out of context.

End Pick, (Illustrated). A steatite working tool of the Stone Bowl Age, both of the 2 specimens were in the Lower Zone.

Shaver, (Illustrated). A steatite finishing tool of the Stone Bowl Age, in evidence at steatite quarries, was recovered from the bottom of the Middle Zone; probably used for thinning walls of stone bowls which had survived from Stone Bowl times.
FIG. 5—Middle Zone—start of Ceramic Age (Stage 1 pottery). 1, Gorget; 2, Triangular hoe; 3, Club; 4, Shaver; 5, 6, Graphite; 7-10, Stem scrapers; 11, 12, Steepedge scrapers; 13, 14, Elbow pipe-forms; 15, T drill; 16, Platform pipe; 17, Platform pipe-form; 18, Stem knife; 19, Eared drill; Points: 20-23, Small stem; 24-27, Small triangular; 28, Diamond; 29, Leaf; 30-33, Corner-removed #3; 34-38, Side-notched; 39-43, Eared.
Club, (Illustrated). Small cobbles with central grooves presumed to be clubs were found in all zones. Also, 2 war-club prongs appeared in the Upper Zone; are presumed to have been set in the head of wooden clubs.

Stem and Stemless Knives, (Illustrated). In these classes are 31 specimens which appeared throughout all zones.

Plummet, (Illustrated). In this class of probable fishline sinkers occurred one specimen in the Lower Zone.

Oval Scraper, (Illustrated). Large oval flat forms with chipped edges, presumably skin scrapers, appeared in all zones; similarly shaped metal blades are still used on Middle Western reservations for cleaning skins—are called slimers.

Small Scrapers—Flake, Stem, Thumbnail, Steep-edge, (Illustrated). In this group occur 388 specimens. Made of quartz for the most part, all but a few are from the Middle and Upper Zones. Among several uses, one seems to have been that of scraping graphite for black paint, (see illustrated specimens of scraped graphite).

Gorget, (Illustrated). This class of two hole perforated pendants is represented by 8 specimens from all zones.

Triangular Hoe, (Illustrated). This type of implement has a triangular shape with a more or less pointed bit and a thick oblique base; is believed to indicate the presence of agriculture. Hafted to handles these blades not only served farming requirements but probably helped dig refuse pits and graves at the site. There were 10 recoveries all from the Middle and Upper Zones.

Spade, (Illustrated). Chipped flattened stones of granite or sandstone with shanks for handles or for hafting were probably used as spades in digging pits and graves. There are 4 specimens from the Middle and Upper Zones.

Sinewstone, (Illustrated). Cobbles with abraded grooves along the edges are presumed to have been used for softening bowstrings. There are 3 specimens all from the Upper Zone.

Woodworking Tools—Notcher, Abrader, Scraper, (Illustrated in part). Rudely shaped forms of quartz for finishing spear and arrow shafts were encountered in all zones.

Shell Jewelry and Trinkets, (Illustrated). These small pieces were used on necklaces or as fetishes; some represent different products of the age. They all came from the Upper Zone.

Net Sinker, (Not illustrated). One pebble with a notch on one side is probably a net sinker; no others were found. It appeared at the top of the Upper Zone and seems to indicate that nets were not in use until shortly before the site was abandoned.

Pottery Tools—Clay Kneader, Smoother, Trimmer, (Illustrated). These implements with little apparent shaping were concentrated in the Upper Zone where much of the pottery making occurred. Kneaders are large elongated sandstone cobbles with pecked out pits on opposing faces for a finger grip; there were 7. They are battered and show signs of rubbing. Smoothers are conveniently sized stones showing abrasion; exhibit #5 was part of the grave goods from Burial 7. They were probably used to smooth interiors and exteriors of pots during the second phase of pottery development. The single trimmer is made of shale and seems unsuited for cutting harder materials than clay.

Paint Pestle, (Illustrated). Evidently a pestle which has been used in a shallow stone mortar; probably used to grind red ochre for paint.

Paint Mortar, (Not illustrated). Of several anvil-stones—large flat-faced cobbles—2 had a well worked shallow hollow on one face with what looked like red ochre stains around the edges; are presumed to have served as mortars.

Hammerstone, (Not illustrated). There were 63 specimens in this category distributed throughout all zones. There are two kinds, one of which is made of granite or sandstone with finger pits pecked on opposite sides. This type may have been used to knead clay along with the larger kneaders. The other kind of hammer was invariably of quartz, occasionally quartzite pebbles or cores which showed signs of having been used to chip hard stones in the manufacture of implements of all kinds.

Problematical, (Illustrated). From low down in the Upper Zone appeared this unusual artifact. Made of chlorite it has a \( \frac{3}{4} \)" channel running from one end into a \( \frac{3}{8} \)" rounded recess at the other. The recess was originally surmounted at the lower side with a projecting lip, now broken off. The sides of the channel are parallel and display longitudinal
FIG. 6—Upper Zone—Ceramic Age (Stages 2 and 3 pottery). 1, Clay kneader; 2, Paint pestle; 3, 5, Pottery smoothers; 4, Pottery trimmer; 6, Triangular hoe; 7, Celt; 8, Sinewstone; 9, Hand spade; 10, 11, Effigy trinkets; 12, Gorget; 13, 14, Shell jewelry; 15, Problematical—possibly medium for extracting evil spirit from the sick; 16-18, Stem scrapers; 19, Flake scraper; 20, Steepleedge scraper; 21, Side-notched scraper; 22, War club prong; 23, Flake drill; 24-26, Crescent drills; 27, Woodworking scraper; 28, Bowl-type pipe; 29, Graphite; Points: 30-32, Small stem; 33, Corner-removed 34; 34, Tapered stem; 35-39, Side-notched; 40-44, Large triangular; 45-48, Corner-notched; 49-52, Small triangular.
abraded. Three perforations are drilled from one face only, which is unusual, since drilling usually was performed from both faces. Therefore, these holes seem to have the connotation of eyes and mouth of a face with the groove as the nose. If this is so, then the object may be a medicine man's instrument: a medium with implied magical properties for extracting the evil spirit from a sick person.

POTTERY. The study of ceramics plays an important part in the culture analysis of this site. By careful recording and examination of potsherds much has been learned concerning changes through which the pottery industry passed. At Sweet-Meadow Brook disturbances have not caused wholesale displacement of artifacts, as has already been explained. Therefore, by the stratigraphic method of investigation ceramic work techniques and design elements as revealed are believed to be a reliable guide in determining what actually took place through various stages of pottery development. As more independent pottery sites are examined and recorded in this area ceramic pattern should develop with more dependable overtones than would be possible in any other way.

At the lowest pottery level—Middle Zone—at the place where shell refuse first appeared were found Stage 1 potsherds. By comparison with early recoveries from other sites it is believed that they represent pots, which were the first to be made in the area. They have pointed bases (conoidal), with relatively straight necks topped with rudely rounded rims; enough contiguous sherds were recovered to confirm this vessel shape. The ware varies in thickness from $\frac{1}{4}$" to $\frac{3}{8}$" about the body; sometimes thins to $\frac{1}{8}$" at the rim. It has coarse mineral temper—usually crushed quartz—and exhibits much irregularity. Apparently, construction was by coiling, as the ware often separates along seams where coils were pinched together. This suggests structural weakness in this department. Paddling both side of the ware with a cord-wrapped tool seems to have been resorted to as a means of holding the coils more firmly together. Toward the close of the period, site evidence reveals that potters had begun to make a few experiments. For instance, crushed shell instead of stone was tried out for temper, but with unsatisfactory results to judge from the soft and friable remains and their infrequent appearance. Then, at least on two occasions simple designs were attempted over outside cord-marking (Illustrated). One is horizontal dentate, the other widely crossing lines cut with a sharp implement. Undoubtedly, this represents the beginning of design decoration, which developed into many beautiful and intricate motifs by the close of Stage 2 times. All told, there appeared high frequency of Stage 1 sherds indicating the breakage of many pots during this first period of pottery making.

Stage 2 pottery is represented by sherds recovered from the lower two thirds of the Upper Zone. By this time innovations had crept in to considerably alter manufacturing techniques and design. Certain of these changes are suggested by the evidence. For example, cord-marked paddling of vessel interiors was done away with. In its place potters substituted two new finishes, probably with an eye to strengthening the cementing of one coil to another; pottery construction by coiling continued to be the approved technique. The first of these finishes came during the transition from early pottery and consisted of finger-smoothing of interiors, which in time was improved by tool-smoothing. The other was used more frequently, and will be referred to as stick-wiping. Apparently, a notched stick with two or more prongs was wiped over interiors and sometimes exteriors with what seem to have been good results; fewer sherds with this treatment separate along coil seams. From this it would seem that stick-wiping added structural strength to pots; was a worthwhile technical improvement. During this intermediate period vessel shapes retained a pointed base with necks which frequently showed some constriction; sometimes were straight. Rims were usually flattened with simple decoration; at times were rounded and outflaring; infrequently were both outflaring and inflating (Illustrated). This ware varies greatly in thickness, and has either crushed shell, medium mineral, or fine mineral temper; rarely has coarse mineral temper. When the latter appeared it was at the bottom of the Upper Zone; is therefore thought to indicate transitional ware from Stage I. Exteriors are sometimes cord-marked, at other times they are smooth or stick-wiped. Simple to well defined design motifs occur, including: herringbone-horizontal; chevrons; and linear dentate. Designs are made by several techniques consisting of: cord-wrapped-stick (a stick wound with cord laid on repeatedly); trailing (a pronged tool dragged); rocker-stamp (a toothed convex-edged tool rocked back and forth); punctate (stick jabs); scallop shell marking; and dentate...
STAGE 1 pottery is always cord-marked both sides.

FIG. 7—Pottery Development—Stages 1 and 2. Restoration: 1, Cord-marked 2 sides; 5, Dentate; 6, Cord-marked outside; 7, Herringbone, cord-wrapped-stick. 2, 8, 16, Rim sherd profiles; 3, 4, Cord-marked 2 sides with elemental design work; 9, 10, Rocker-stamp; 11, Trailing; 12, Chevron, cord-wrapped-stick; 13, 14, 15, Dentate and trailing.
Stage 3 potsherds appeared in the upper third of the Upper Zone. Their frequency was much less than that of the other stages, which probably indicates a shorter duration for the period. These sherds show a traditional reluctance to alter the pointed base, although evidence of a semi-rounded base also appears (Illustrated). Evidently, conservative potters continued to follow the old conoidal style.
while more aggressive ones began to move toward a base with rounded proportions. Construction still utilized the coiling technique, as evidenced by occasional separation along seams, and by the recovery of the actual end of a clay coil in this upper level, preserved by accidental firing (Illustrated). In this phase, temper is divided between crushed shell and fine mineral additive. Vessel necks remain straight with frequent constriction as before without change except for one innovation: a narrow collar (Illustrated). This collar reinforced rim was produced by applique, in which an extra coil of clay was applied to the outer face and pinched on at the edge. This collar was usually decorated, and became a part of a more or less universal effort to more elaborately embellish the rim. In this stage, rims were flattened; were then often bisected with a simple ornamentation produced by dentate impressions or incised cutting of a continuous line. Decorating techniques remained the same as for Stage 2, except trailing disappeared and a new distinctive method was added: incision (a stylus cut single lines). Elemental simplicity of Stage 2 designs was replaced by greater elaboration in which occurred: geometric forms; oblique dentate impressions; plated dentate; chevrons; and herringbone-vertical (Illustrated). Interior finishes were either stick-wiped or tool-smoothed. Exteriors were often cord-marked; sometimes were tool-smoothed.

Stage 4 pottery of protohistoric times with a well defined castellated collar, deeply constricted neck, and rounded base (globular) is not represented at the site, which may mean that it was not occupied during this last stage of ceramics. While colors of the various ware vary noticeably from rose to yellow-gray in light and dark tones, there seems to be no uniformity of hues in any given stage to serve as culture diagnostics. Consequently, no mention has been made of colors resulting from the firing of clay.

**Discussion and Correlation**

Sweet-Meadow Brook evidence contains no signs of archaic times such as appeared at Twin Rivers site in the uplands. Diagnostic traits of those early days are absent such as: ulu, channeled gouge, and characteristic spear points, corner-removed #5, 8, and 9. One broken corner-removed #5 point appeared, but since it was the only archaic trait present it was considered to be a stray.

However, when it comes to the succeeding Stone Bowl Age, recoveries from the Lower Zone may be compared with those from the low horizon at Potter Pond on Narragansett Bay where concentration of this occupation was heavy. At once we find similarity of traits: stone bowl, stone pipe, pipe-bowl reamer, end pick, grooved ax, and projectile points, corner-removed #7, and eared styles. Furthermore, at both sites as well as at Green Point evidence shows that shellfish were not eaten in this culture period. Other similarities are that spear points tend to be broad bladed, and small stem and small triangular points first appear in this horizon; the latter may indicate the arrival of bow-and-arrow.

With the introduction of pottery making, there are those today who theorize that for several ceramic stages there were corresponding diffusions from Asia bringing new ideas for pottery development. Similarity of ceramic traits from here to Asia seem to them convincing evidence. William A. Ritchie, New York State Archaeologist says: "These data would also seem to support a new hypothesis of a dual wave of pottery diffusion from Asia, the first introducing a simple, cord-wrapped paddle malleated ware, ancestral to Vinette 1, Fayette Thick and their widely diffused derivatives; the second, occurring more than a thousand years later, being responsible for the classic Woodland cord-imprinted, dentate, rocker-stamped and punctate decorated groups, to which our Vinette 2 ware belongs." (Recent Discoveries Suggesting an Early Woodland Burial Cult in the Northeast, University of the State of New York, Circular 40, p. 70. Albany. 1955).

While there may be good grounds for the existence of such a diffusion when the subject is treated in a general way, when confined to a single site like Sweet-Meadow Brook, other compelling implications stand out. For instance, there are no clearly drawn lines of separation between development stages. Instead, one group of techniques merges into the next. We find experiments in design treatment creeping in at the end of Stage 1, as though potters were groping for decorative ideas, rather than using established designs being passed on from some northwestern source. Then with the passage of time, design improvements of Stage 2 suggest independent creative stimulus at work; are finally replaced by Stage 3 ware having more forceful decorative elements, such as incised herringbone in a non-conventional vertical treatment.
over the entire neck. To say that such development from a simple beginning was diffused from an outside culture is to discredit human-self-expression. It would be to suggest that creative ideas were superimposed upon decadent individuals who were unable to invent for themselves. But the reverse seems to be true at Sweet-Meadow Brook. Here we see people, who had improved their economic status through a long industrial period of stone bowl making in which independent invention played a major role, undertaking the new industry of pottery making. To say that they were incompetent of continuing to create is to ignore their traditional background and human attributes. However, this is not to deny the probability that the essentials of ceramics diffused into New England from the Northwest bringing certain design elements. But beyond this, it seems more realistic to accredit much of the development to the creative ability of local potters. In the normal advance from one pottery stage to another, we can see what look like errors of judgment: experimental trials in some cases produce inferior ware which fails of universal acceptance. This progress by trial and error suggests cultural development by independent invention, it would seem, rather than by diffused outside instruction. Therefore, we are led to believe from the evidence that with the arrival of ceramic knowledge, the Stone Bowl Makers forsook their established industry and commenced making pots from clay; and continued to exercise ingenuity as in the past to improve upon ideas, which by then were pressing in upon them from western regions.

Mention should be made of the Carbon-14 date, 1156 A.D. ± 80 years, already discussed in a former chapter. It has been shown how the transition from Stage 1 to Stage 2 pottery may be correlated with it; and how a readjusted estimate might place this transition at a slightly earlier date of 1000 A.D., with the advent of pottery making postulated at about 500 A.D. However, since there exists a wide disparity between this date and that postulated by Ritchie for New York State, it may be well to examine what Ritchie has to say about it. In his “Recent Discoveries” publication of 1955 he says: "One important corollary of the dating of the Indian River phase of the Point Peninsular tradition at approximately 2450 B.C. stems from the possibility discussed above, that Vinette 1 (Stage 1) pottery may already have been in use at this remote day. Evidently this pottery type flourished for a very long time in New York before replaced by the cord and dentat-marked varieties. We have recorded this gradual replacement by a growing number of types of Vinette 2 (Stage 2) ware in the refuse deposits of the remarkable Vinette habitation site at Brewerton, which seemed to be connected with the burial component known as Oberlander, No. 2; crematory charcoal from Burial 6 at the latter yielded a date of approximately 998 B.C ± 170 years. It was impossible, however, to correlate this burial with any particular level of the Vinette settlement, hence we can state only that Vinette 1 pottery was apparently going out of fashion in central New York somewhere around 1000 B.C."

There seems to be no way to reconcile such a wide disparity as 2,000 years which exists between Ritchie’s 1000 B.C. and that at Sweet-Meadow Brook of 1000 A.D. By agreeing with Ritchie we would be obliged to reduce preceramic days by about 2,500 years, thus allowing less time for archaic development and more for ceramic advance. This would not seem to agree with what is known about cultural progress, that culture periods are longer in earlier times and shorter as the present is approached. Furthermore, looking at the site evidence it is difficult to imagine how a continuous occupancy of 4,000 years of ceramic production—based on Ritchie’s dates—would have deposited such a limited amount of broken pots and refuse as was found at the site, where there was no evidence of lapses of unoccupancy between culture zones. Further, it should be pointed out that Ritchie’s statement concludes by saying that correlation between Vinette culture levels and the Burial 6 Carbon-14 date has not been possible; no potsherds of any kind were found in the burial.

Now compare the postulated advent of pottery at Sweet-Meadow Brook of 500 A.D. with other pottery beginnings in the Southwest which have been established by Carbon-14 measures as follows: southern area of the Southwest—about 150 B.C. (Erik K. Reed); at Forestdale, eastern-central Arizona—about 320 A.D. (Erik K. Reed); at Obelisk Cave, northeastern Arizona, Canyon de Chelly—about 475 A.D. (Erik K. Reed). Here we find an apparent diffusion of ceramics from Mexico which required about 450 years to spread from the southern perimeter of the Southwest next to Mexico to the Canyon de Chelly in Arizona. This suggests that the diffusion to New England, whatever its source, would have taken many years. However,
whereas the Southwest with shallow rounded bowls probably derived ceramics from Mexico, the Northeast with conoidal elongated pots may have received its diffusion from another source, probably Asia where similar traits occur. Now, it seems illogical that knowledge of such an important industry as ceramics would have diffused from Asia some 2,000 years earlier than that from Mexico, and have attached itself exclusively to the Northeast without rubbing off to some extent on cultures to the southwest; without ceramics at this early date the latter would have been susceptible to introduction of this new industry. Therefore, a date of 500 A.D. for the advent of pottery in the Northeast seems more realistic than one of about 2000 B.C. as postulated by Ritchie.

Finally, chronology at the site reflects new dating based upon the Carbon-14 measure of Burial 2, and cancels the former chronology based on Ritchie's Carbon-14 measure for New York State as published in: "Twin Rivers: Four Culture Sequence at a Rhode Island Site," Bulletin of the Massachusetts Archaeological Society, Vol. 14, No 1, p. 17. Attleboro. We are now able to offer the following chronology subject to modification as new evidence is revealed: Paleo American—7000 B.C.; Early Archaic 4000 B.C.; Stone Bowl—2000 B.C.; Ceramic—500 A.D.

Conclusion

Since pottery remains at Sweet-Meadow Brook dominate all other evidence their interpretation should help reveal to a large extent activities at the site. Apparently, only a short occupancy took place before the advent of pottery. However, it probably represents the economic background upon which ceramic society was built. Similarity between this site's evidence and that from Potter Pond and Green Point on Narragansett Bay serves to strengthen the findings of this report.

During the latter part of the prehistoric industrial age when stone bowls were pecked out of stone, people established a camp on the sand terrace of Sweet-Meadow Brook. These Stone Bowl makers not only fashioned bowls from stone but made stone pipes in straight, elbow and platform shapes. The industry was male dominated, with the floor cleaning of the quarries performed by women. There is now reason to believe that women carried burdens on their heads, and continued to do so through early ceramic times. Therefore, we may imagine them returning from the quarries balancing baskets aloft filled with stone products of the industry. The whole family lived at the quarry with rough accommodations for days at a time, while the stone products they needed were manufactured. From the time when they commenced to make stone eating vessels, liquid foods had been added to their diet. However, apparently they had not developed a taste for shellfish, for they left behind no shellfish refuse.

The time came when they began to gather and eat shellfish, and soon after they received knowledge of how to make pots from clay, probably from the natives of Long Island, who in turn may have learned of the new industry from New Jersey and Pennsylvania peoples. By the time the diffusion had reached New England, the period of experimentation had ended and the stone bowl artisans had ceased to resist change to the new vessel shape with its pointed base. Apparently, women took over the new industry which replaced that of stone bowl making, and became the potters. Soon the quarries were forced to close for want of a demand for bowls; an industrial revolution had taken place with the control passing to women. They now became the suppliers of eating and cooking ware.

For many years thereafter ceramic pots held strictly to the approved shape and construction which was first taught. Potters struggled to cement together the coils of clay they rolled in their hands and placed one over another to form the vessel's walls. Evidently, they were so busy trying to perfect this technique and make the coils hold together that they gave no thought to more elaborate surface decoration. However, toward the end of this first pottery phase a few energetic souls experimented by scratching or pressing simple line decorations on the paddled outside surface of the pot's neck. Then they went a step further and attempted a switch from coarsely ground quartz to crushed shell temper. However, this was not found to be an improvement and was dropped until sometime later, when a way was found to use shell additive with fair results.

Now the second stage of pottery development commenced. Potters had reached a point where dormant aesthetic ideas began to assert themselves. Beautifying the pot by artistic surface markings became the fashion of the day with various decorating techniques and designs taking shape as shown by the illustrations. During a long period
in which pottery skill increased, vessels were molded with innovations in neck and rim frequently occurring to alter the vessel's contour. However, at no time did the potters elect to do away with the pointed base. This feature had become so entrenched as a part of their tradition that they could not conceive of a pot being made without it.

Contemporaneous with this pottery advance men continued to make stone smoking pipes. But here as in the case of pottery, changes took place. Men returned to the stone quarries occasionally for soapstone and chlorite from which the pipes were made. Chlorite increased in popularity and new quarries may have been opened, like the one at Stafford Springs. Elbow pipes continued to be made but the platform shape finally disappeared. By the middle or end of the second pottery phase a new pipe shape emerged. Instead of the bowl and stem being joined in one unit the bowl was made without the stone stem. In its place, a large hole was made in the base of the pipe bowl for insertion of a hollow reed or bone stem. From then on into historic times this bowl-type pipe was in use. During later years we know that ceramic elbow pipes were made—probably by the women—although no specimens were recovered at the site.

In the stone implement industry during this same ceramic period we see another significant supplantation. Broad blade eared projectile points in triangular forms, which appeared with Stage 1 pottery, were replaced by large triangular points without ears; evidently by then ears were found to be unnecessary and were dropped. Another significant innovation is that of war club prongs. The appearance of these for the first time probably indicates increased military action in this latter age. This may have something to do with the spiritual decline noted from a study of site burials. With the coming of Stage 2 pottery times less respect is shown the deceased: interments show less care in preparation and grave goods disappear. It seems probable that tribal friction with increased military action contributed to a spiritual decline which had set in.

Finally, after pottery had been made for nearly a thousand years, certain elaborations in design and vessel styles became apparent; potters capitalized upon their improved skill by trying new techniques and decorative treatments. Two outstanding changes which began to take shape are a trend toward a slightly rounded base, and formation of a collar by applique around the edge. In designing, incised geometric elements appear with a vertical herringbone embellishment of the neck. These improvements are noted at the site for the third phase of pottery development, while other variations and design motifs are apparent from a study of collections containing sherds gathered from a wider field of occupation.

Sometime before 1600 A.D. when pots received their final adornment as inspired by Mohawk-Iroquoian contacts, Sweet-Meadow Brook site was abandoned; evidently was not occupied by the Narragansetts during historic times; no remains of Stage 4 pottery were found to indicate this last phase of the industry.

During the entire span of ceramic activity, site evidence suggests the presence of agriculture because of the occurrence of triangular hoes. These implements perhaps more than any other evidence indicate farming activities. Here, as at other sites, agriculture first appears with the coming of pottery making, following termination of stone bowl manufacture. No evidence has occurred so far to indicate farming activities in preceramic times.

Bronson Museum
Attleboro, Mass.
April 1956