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Contents

A PRIMER FOR POTTERY CLASSIFICATION, METROPOLITAN COASTAL NEW YORK

Edward J. Kaeser Metropolitan Chapter

Due to the dearth of readily available, clearly illustrated, descriptive literature and to the absence of taxonomic labels on displayed museum specimens of local aboriginal ceramics, a growing need is felt by both the professional and nonprofessional student for a simple, concise description of the basic pottery types of metropolitan New York locale and an accompanying chronological pottery sequence which would serve as an on-the-site field reference and as an aid in classification for type frequency tabulation in site reporting.

This paper is an effort to assist all who have a genuine concern for the scientific salvage of the rapidly disappearing Indian remains of metropolitan New York and as a plea to those who have made ceramic artifactual recoveries, although considered insignificant by the finder, to preserve, classify, and record these irreplaceable finds as factually and accurately as possible.

Archaeologically, two broad, basic patterns of Indian culture are evident in the area of coastal metropolitan New York: the Archaic, or preceramic pattern, and the tradition of Woodland ceramics, represented by ceramic cooking vessels of a people who presumably practiced a primitive form of horticulture yet retained their archaic ancestral hunter-gatherer economy. The artifactual diagnostics of the transitional late Archaic to early Woodland culture found locally are steatite bowl sherds and projectile point forms typologically assigned to this period of transition on Long Island and the Hudson Valley (Ritchie, 1958, 1959, 1961). The displacement of the specific culture trait habit of stone bowl utilization by the manufacture of ceramic cooking vessels marks the beginning of the Woodland period.

This paper will deal only with the basic pottery types of the main culture divisions (aspects) and the chronological and developmental stages of the aspects (foci) of the Woodland, from the earliest definable pottery type, Vinette I or Vinette Interior Cord Marked, representing the Windsor Aspect, North Beach Focus, to the Eastern Incised type representing the East River Aspect, Clasons Point Focus, the latest recognized type recovered from metropolitan coastal New York sites (Smith, 1950).

Apart from a few nonconforming or experimenting potters and an occasional specimen of alien ceramics probably traded or in some manner diffused into the area, the native pottery manufacturers standardized traditional styles of construction techniques, vessel forms, paste components, and decorative motifs. Familiarity with these standardized groups of traits allow the investigator to separate and classify pottery sherds recovered out of or from uncertain stratigraphic context which, in this portion of New York, is commonly the case because of generally thin and often greatly disturbed midden conditions.

All ceramics of the area contain some type of crushed or naturally fragmented tempering material, either mineral or shell, the latter aplastic being the rarer, even at most temporally late sites where shell temper might be expected nearly to equal grit temper in favor. Grit tempering appears as micro-crystalline sand, possibly a

EAST RIVER ASPECT POTS

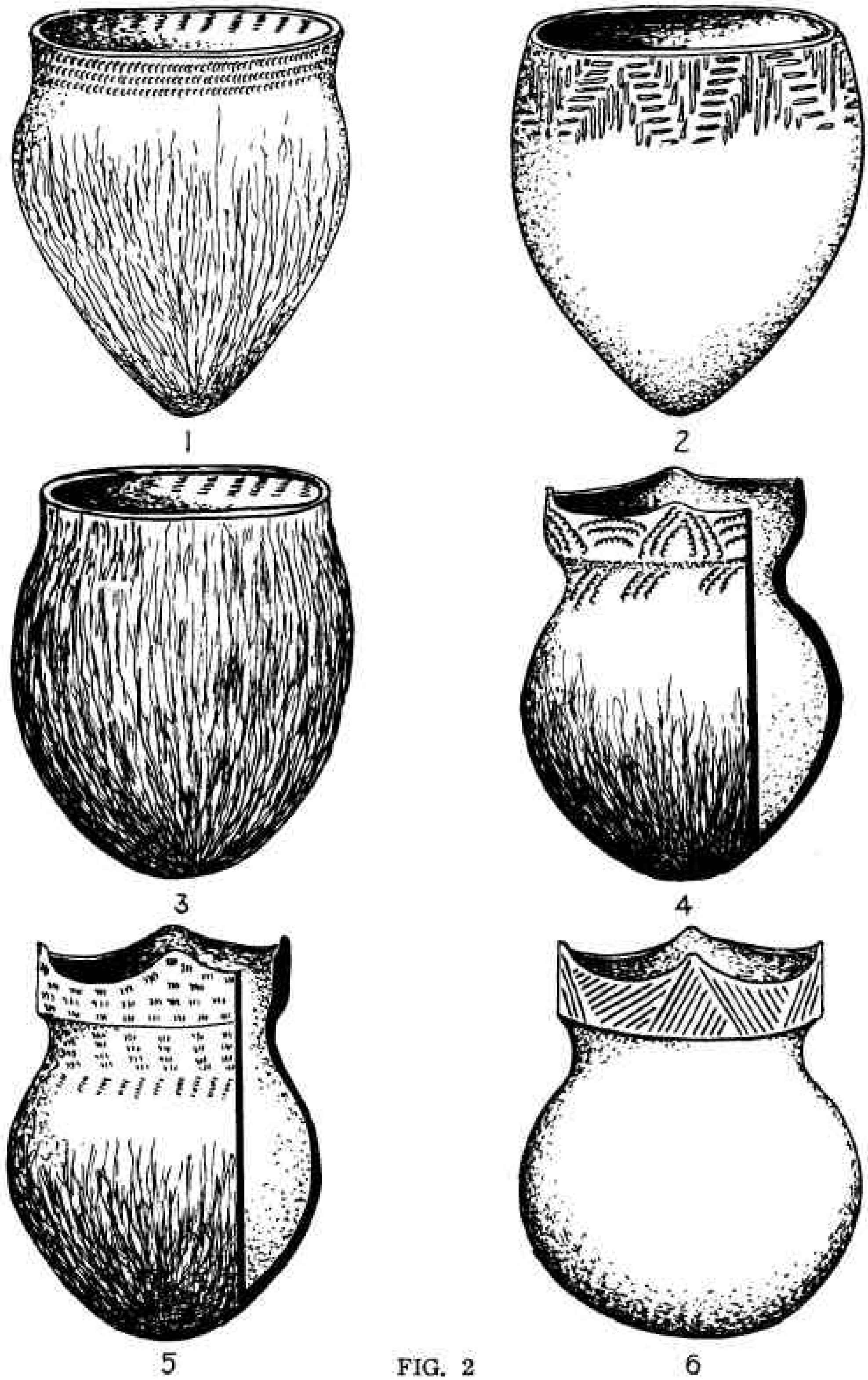

FIG. 2

natural inclusion in the raw clay, or as large water-rounded or angular granules of quartz, feldspar, or plates of mica. Generally, the coarser tempering materials were utilized in the manufacture of the earliest ceramics, resulting in poorly fired, thick, friable products. As ceramic technological methods of manufacture improved, pottery became hard and thinner in cross section and more symmetrical and graceful in contour; and often the fired paste, containing extremely fine grit as the aplastic, is so well consolidated that the technique of construction cannot be definitely determined unless concave breaks appear on sherd edges demonstrating coil separation.

Where fragmented mollusk shell is used as the tempering agent, the flat plates of shell are often aligned parallel to the sherd surfaces through malleation. In instances where this type of temper is profusely used in the paste mixture and the sherds are recovered wet, they often delaminate through their thickness along planes created by the compacted shell.

The changes in surface treatment, as integrally related to manufacturing procedure, are an index of stages in ceramic evolution, which began with the fusing of stacked coils of clay by malleation with a cord-wrapped paddle both on the exterior and interior surfaces, as illustrated by the type Vinette Interior Cord Marked.

A second, and probably later, process of construction was the paddle and anvil method, by which flattened cakes of clay were molded to vessel form by holding a smooth, rounded stone against the interior surface and fusing the wads of soft clay together, to the desired form and thickness, by malleating the exterior with a paddle.

A possibly more efficient procedure of welding together construction coils was the brushing method, the use of a frayed stick or bunch of grass stems, which gave the finished piece a haphazard striated or scoured appearance.

The next modification brought about partially or completely smoothed interiors, either by scraping or by wetting and smoothing with the fingers, making the vessels structurally more sound and, I presume, hygienically more desirable, though this purpose might not have been even vaguely the intention of the potter. Concomitantly with smoothed interiors, exterior surfaces begin to show the impressions of paddles wrapped with net or simple woven textile and, as a next step, smoothed-over malleation impressions, beginning at noncollared vessel rim portions and on collars where decorative motifs occur, and progressing to entirely plain exteriors, with all signs of malleation obliterated in the latest forms.

The beginning of decorating technique is observed on both interior and exterior surfaces, in the form of parallel lines of rectangular or oval dentate stamping thought to have been applied with a multi-toothed or notched crescentic or gear-like tool. It is tenable that this treatment is an outgrowth of interior surface corded paddle malleation and brushing practice.

True decorative techniques are usually confined to the rim or collar portion but sometimes run well down the body of the vessel. Occasionally, several decorative techniques are combined, illustrating an individual potter's artistic experimentation, nonconformity to established tradition, or foreign influence.

The following are the basic techniques utilized in the rendition of decorative motifs on metropolitan New York pottery:

1. Cord-wrapped stick or paddle-edge stamping.

2. Dentate stamped--showing linear oval or rectangular stamped impressions.

3. Punctated--produced by hollow reed, bone, or twig-end punch, rarely forming interior surface bosses.

4. Incised--a. fine line, produced by stone flake or sharp-pointed stylus.
   b. broad line, produced by thick bone sliver or twig, usually appearing as dragged channels.

5. Scallop-shell stamped--produced by crenellated edge of pecten shell pressed into clay at right angle or obliquely to surface, showing partial negative impression of ribbed dorsal surface or the shell.

In the absence of Woodland period radiocarbon dates for coastal New York, the chronological sequence must be considered as tentative. Utilizing the latest available C-14 date of 944 B.C. ± 250 years for the Transitional period Orient Complex of Long Island, a date between 1000 B.C., and A.D. 700 is postulated for the entry of the Windsor Aspect into the area. This culture division, in its earliest form (North Beach Focus), continued well into the late Woodland period (Clearview Focus), when it was replaced by the East River Aspect, whose early foci parallel the central New York Owasco tradition, ranging roughly from A.D. 700 to A.D. 1500. People of the East River culture, their ceramics showing progressive Iroquoian influence or inspiration, continued occupancy of the area into the last quarter of the seventeenth century. At this point, the last vestiges of native culture disintegrate.

In the following typological seriation, the progressive temporal change in ceramics can be followed as a stream of cultural evolution from early crude, to late, showing a comparatively high degree of technological perfection. Only by continued excavation, study, and absolute dates, can the validity of the presently accepted seriation be established.

Windsor Aspect

North Beach Focus

Vinette I (Fig. 1:1)

Oldest definable type in the Northeast.

Surface finish--Exterior and interior cord-wrapped paddle-marked from base to lip. Interior surface horizontal cord marked. Exterior surface vertical or occasionally obliquely cord marked.

Shape --straight sided, conoidal bottom, occasional slight rim flare. Rim lip flat rounded, or rolled as if sagged.

Temper --coarse mineral grit, crushed quartz, feldspar.

Paste . --granular, often crumbling when in wet condition. Coiled construction. Average thickness 5/16 - 3/8 inch.

North Beach Brushed (Fig. 1:2)

Surface finish --haphazard, faint brush marks over entire interior and exterior surfaces made by frayed stick or stiff fibers.

Shape --straight sided, conoidal bottom, occasional slightly constricted neck and rim flare.

Temper --medium-coarse mineral grit, crushed quartz.

Paste --granular, coiled construction. Average thickness 5/16 - 3/8 inch.

North Beach Net Marked (Fig. 1:3)

Surface finish --interior smoothed, exterior impressed with net-wrapped paddle showing knotted intersections of cords. More often netting applied in bunch giving coarse stippled appearance.
Shape --straight sided, conoidal bottom, occasional slight constricted neck and rim flare.
Temper --medium-coarse mineral grit, crushed quartz or shell.
Paste --granular, coiled construction. When shell tempered, structure is flaky. Average thickness 5/16 inch.

Clearview Focus

Clearview Stamped (Fig. 1:4)

Surface finish --interior and exterior surfaces smoothed, but lumpy. Most of interior and exterior surfaces impressed with parallel lines of crude rectangular or oval dentate stampings.
Shape --slightly rounded sides, conoidal bottom, occasional slight constricted neck and rim flare.
Temper --medium-coarse mineral grit, crushed quartz or shell.
Paste --granular, coiled construction. Average thickness 1/4 - 5/16 inch.

<u>East River Aspect</u>

Bowmans Brook Focus

Bowmans Brook Stamped (Fig. 2:1)

Surface finish --interior smooth. Exterior rim and neck portion smoothed. Exterior body impressed with cord-wrapped paddle. Stamped impressions of cord-wrapped stick or paddle edge encircle exterior neck portion, and short lines of similar stamping are applied to lip and inner surface of rim.
Shape --rounded shoulder, conoidal bottom, constricted neck, flaring or straight rim.
Temper --medium-coarse mineral grit, crushed quartz.
Paste --compact, moderately coarse texture. Coiled construction. Average thickness 1/4 inch.

Bowmans Brook Focus (Late)

Bowmans Brook Incised (Fig. 2:2)

Surface finish --interior and exterior smooth, some vessels cord-wrapped paddle-impressed on lower body. Exterior rim and shoulder portion incised with chevrons, herringbone, opposing triangular plats, and occasional punctations.
Shape --rounded shoulder, conoidal to rounded bottom, straight or insloping rim.

Temper --medium to fine mineral grit, crushed quartz, mica; rarely shell tempered.

Paste --compact, moderately coarse texture. Usually exhibits coil construction. Average thickness 1/4 inch.

Bowmans Brook (Early) Clasons Point Focus

East River Cord Marked (Fig. 2:3)

Surface finish --interior smooth, exterior impressed with cord-wrapped paddle from base to lip. Short lines of corded-paddle edge applied to inner surface of rim.

Shape .--rounded shoulder, rounded bottom. Slight constriction of neck ...portion, slight flaring or straight rim.

Temper --medium-coarse mineral grit, crushed quartz or rarely shell tempered.

Paste --compact, moderately coarse texture. Usually exhibits coil construction. Average thickness 1/4 inch.

Clasons Point Focus

Clasons Point Stamped (Fig. 2:4)

Surface finish--Interior smooth, exterior collar and neck portion smoothed. Exterior lower body impressed with cord-wrapped paddle. Parallel lines of scallop-shell stamping in combinations of vertical, horizontal, and diagonal arrangement on exterior collar. Motif occasionally extending downward to shoulder.

Shape --rounded shoulder, semi-conoidal bottom, constricted neck. First collared and castellated rims appear, incipient collar, clay forced outward from interior forming S shaped profile.

Temper --medium-coarse to fine mineral grit, crushed quartz, or rarely shell tempered.

Paste --compact, moderately coarse texture, usually exhibits coil construction. Average thickness 1/4 inch.

Van Cortlandt Stamped (Fig. 2:.5)

Surface finish --interior smooth, exterior collar and neck portion smoothed. Exterior lower body impressed with cord-wrapped paddle. Horizontal parallel lines of cord-wrapped stick or paddle edge encircle exterior of collar. Neck and shoulder impressions, vertical or diagonal.

Shape --rounded shoulder, semi-conoidal or rounded bottom, constricted neck. First true castellated collars appear, applied to rim in band.

Temper --medium-coarse to fine mineral grit, crushed quartz, mica.

Paste --compact, moderately coarse to fine texture. Some evidence of coil construction, most sherds irregular at break edges. Average thickness 1/4 inch.

Clasons Point Focus (Late)

Eastern Incised (Fig. 2:6)

Surface finish --interior and exterior surfaces smooth. On band around collar, parallel, fine incised lines arranged in combinations of horizontals, diagonals, and verticals in opposition to each other. Lower margin of collar sometimes notched.

Shape --rounded shoulder, rounded bottom, constricted neck, well formed collar and castellations.

Temper --medium to fine mineral grit, crushed quartz, mica, or sand.

Paste --compact, moderately coarse to fine texture. Sherds break irregularly, little evidence of coil construction. Average thickness 1/4 inch.

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BONES ARE AS IMPORTANT AS SHERDS AND STONES*

Barbara H. Butler Frederick M. Houghton Chapter

It is fascinating to paste potsherds together and reconstruct a pot which was made centuries ago by people long dead. By comparing its shape and design with the ceramic seriations which have been worked out, one can find that it was made later than a certain kind of pottery, but predates another kind. After a great deal of knowledge and effort has been devoted to describing that one pot, the question then comes to mind: what is genuinely important about it--the pot, or the person who made that pot in its peculiar form because the designer was a member of a particular culture, now extinct. For a serious student of archaeology, the latter will be the more important consideration; and after he has extracted a maximum of cultural information from it, he will turn to other sources of information about what is his basic study, not artifacts and things, but peoples and cultures.

One of those sources, which have been sadly neglected in excavation reports, is an analysis of animal osteological material. Through careful study, the bone refuse from a site can yield a great deal of information. J.C. Wylie once commented that "the stream of refuse flowing from any community provides material from which a compre-

*Paper read at the annual meeting of the New York State Archeological Association, April 6, 1964, at Hotel Thayer, West Point, N.Y.

hensive record of the life and interests of the people could be written" (Wylie, 1959).

It has happened that the material collected at an archaeological site becomes an illustration of the excavator's interests rather than a true sampling of all the material found on the site. Selective digging will give a biased report; but by including bone in the material saved, the excavator adds substantially to the information concerning the people who lived by and with the materials he finds.

There are three basic procedures which, if followed systematically and completely, will lead to the maximum knowledge from the animal osteological material to be included with the information from the pottery, the settlement patterns, the stone material, and the human remains to give a total site picture. The procedures are these:

1. removing the material from the ground;
2. analyzing the material at the laboratory;
3. asking questions which can be answered by osteological data.

During field work all bone material should be saved as the first basic procedure. Some of the slivers may look trivial and insignificant, but when compared in the laboratory with all the material, may take on important character. As the bone is dug, as with the rest of the archaeological data, records should be kept of levels, features, and proveniences. The bone can be collected and brought in with the rest of the material. (One danger to guard against is crushing very fragile material.)

While one is in the field, it is very important to observe the many natural forces which have been working on the bone. For example, the soil should be tested for its acid/alkaline content, and drainage conditions should be observed, for these factors affect bone preservation. Bone will completely disappear in acid, permeable soil.

The laboratory work, the second basic procedure, can be divided into several phases. The first thing to do is separate the bone material from the other cultural material, being careful to record the provenience and other data on the receptacle in which the bone is being kept. At this time it is also a good idea to clean the bones of sand and dirt. There are two ways of doing this. One is to wash the bone in a soap and water solution, rinse, and let air dry. If the bone is fragile it may be wiser to brush the bone with a small brush and use a wooden scraper of some type with a pointed end to get rid of foreign material. During this sorting and cleaning process, and also later in the second phase, it may be noticed that several pieces are from the same bone. It is good to make a note of these fits, but at this time they should not be glued together. These fractures may be important evidence in discovering butchering techniques.

Before the actual identification can begin, a catalogue system should be worked out so each bone can be individually recognized and kept with its data. The system should be one that is compatible with the catalogue for the other material from the site.

The next phase involves separation of the types of bones. A good book to consult for more detailed information along these lines and for line drawings of the bones is I. W. Cornwall's Bones for the Archaeologist. At this point, all the bones which look basically alike should go into one pile. The size of the bones does not matter, just so all tibias, femurs, ulnas, and so forth, are sorted into individual piles.

Here it is helpful to remember that the individual mammal bones are basically like the corresponding human bones. If you can recognize the humerus of a man, you can recognize the humerus of a woodchuck, deer, or any other mammal. Bird, reptile, and amphibian bones are basically similar, and after a few of these have been seen, their identification should offer no difficulty. After all the recognizable bones are placed in their appropriate groups, you can deal with the fragments by trying to identify as to fish, amphibian, reptile, bird, or mammal, or by putting them with the type of bone of which they appear to be fragments.

Next, put all the same sized bones in a separate group--still keeping all ulnas separate, femurs, and so forth. At this point, you might also want to separate the right component from the left.

By this time you will have a good idea of the gross character of the material. Very large bones will probably be mammal; bird bone can be distinguished from mammal because bird bone lacks marrow and instead has many air spaces in its place. Fish bone is usually flat and irregular, except for the vertebrae. These can be recognized by concavities on both sides of the body of the vertebra.

Now the bones can be compared with other known bones, drawings, or photographs of identified bone for specific identification; or they can be sent to a reliable person if one is nearby and will do the job.

When the bones have been identified as to species, all the types of bones from one species of animal should be grouped together. For example, all the deer bone should be put in one group, keeping tibias together, femurs together, and so forth.

The last step is to determine the minimum number of individuals represented. This information is important in developing the third basic procedure. The minimum numbers of individuals can be determined by counting the bone which is represented with the highest frequency. For instance, in the case of the deer, it may be the right tibia which is represented the most with fifteen bones. Therefore, one could say there were at least fifteen deer represented on the site.

As one does this over and over, the easier it becomes; and each step accomplished will give just that much more information.

One's interpretation of the osteological data can be increased by remembering that the bone found on sites in the Northeast is modern bone, as opposed to fossil bone--so one is dealing with known animals. The habits of the same species of animals living today should be studied. Migration, breeding, living, and dietary habits should be known by the person analyzing the bone and putting it in context with the material from the site.

After the osteological material has been identified, it can be considered in context with the rest of the evidence. The following questions are some which can be answered by use of osteological data. These answers will yield interesting interpretations. Not all of these questions are applicable to every site nor are they to be considered exhaustive. Others will occur to the alert excavator.

The types of questions which might be asked can be grouped into several major categories: (1) diet; (2) ecological setting; (3) technological practices; and (4) ritual practices.

(1) DIET

The dietary category can be broken into several subdivisions.

--What animals were represented on the site, and what was the maximum number represented? This will give an indication of food preferences and amount of food available.

--How much meat would that number of animals provide? Tables have been worked out based on percentages of usable meat in various types of animals from standard textbooks on animal husbandry; from these tables educated guesses can be made. For example, the average live weight of a Virginia deer is 200 pounds; 50% of that weight is usable meat, meaning that from one deer you might get about 100 pounds of usable meat. If the average person required one-half pound of meat per day, it is easily seen how far one deer might go for food.

--Are any two species consistently found together? The answer to this may show combination preferences or ceremonial preferences.

--How much burned bone is present? If whole bones are not burned completely, how much of the bone is burned? These answers may give a clue to cooking habits.

--How were the animals butchered? There are several good studies in the literature where this question has been answered for a particular site. One good example is by Guilday, Parmalee, and Tanner. They discuss the methods used on a site in Pennsylvania providing bones of the following animals: wolf, gray fox, black bear, raccoon, bobcat, mountain lion, beaver, deer, elk, turkey, Canada goose, and bald eagle. The criteria used in judging a butchering mark from a "trowel trauma" are these: (1) repetition in specimen after specimen at precisely the same location on the bone; (2) some anatomically dictated reason why a particular mark should occur at a given spot.

--By keeping careful records of the locations of the various bone finds, one might be able to tell if a certain type of residue was kept in a certain area of the site.

(2) ECOLOGICAL SETTING

--Was the site temporary and seasonal or was it occupied throughout the entire year? The question can be answered by comparing several types of evidence. Knowing the habits of the animals represented on the site, one can interpret the evidence. If many immature woodchucks are found, one would deduce that the site was probably occupied during the summer. Woodchucks are usually born in April or May, and there is usually one litter per year. The young are weaned in late June or early July. Age analysis is generally not very difficult. In determining age, the pelves, limb bones, and skull are best. The degree of closure, or obliteration of the epiphyses on the bones, and the eruption of teeth are the most significant, although age may be roughly determined from the overall size of the bones. The antler growth and changes of the white-tailed deer have been studied in great detail. If antler can be found, it can be used for determination of the season the site was occupied.

--Sometimes the extent of hunting ranges can be determined by the animal bone found. Some animals have very distinctive habits which confine them to certain areas. For example, the American eel, which lives as an adult in fresh water and spawns only in the tropical areas of the Atlantic Ocean, is native only to Lake Ontario. Knowing such habits gives one an idea of where the various animals might have been trapped or caught.

3) TECHNOLOGICAL PRACTICES

--Was a whole large animal brought back to the living site after it had been killed? The osteological evidence can help answer this question. If certain bones of a large species of animal are consistently represented, and another part of the skeleton is consistently missing, one might postulate that a large animal was dismembered at the kill site, and only the usable portions were brought back. If a whole animal was butchered at the occupation site, one might reasonably expect to find all areas of the skeleton represented.

--Was there cooperative activity among the inhabitants of the site? One might infer this if one found several large animals, like a bear or deer, which ordinarily would be too large for one person conveniently to handle.

--Sometimes the osteological material may suggest certain cultural equipment for which no material evidence is preserved. Heizer proved that some type of water craft must have been used by the prehistoric people along the southern coast of California because of the refuse deposits nearby which contained deep-water fish.

--The bones are an excellent source of raw materials for artifacts. It is important to correlate the food residues with the inventory of tools from the site.

(4) RITUAL PRACTICES

--What types of evidence could be considered ritual practices? Sacrificial habits may be noted by finding a specially treated animal. This may be recognizable by a special burial or a consistent representation of a particular species only in limited numbers and with similar age characteristics. One might infer ritual practices if a particular part of an otherwise entire skeleton is missing. Sometimes these missing pieces can be found in an area away from the occupation site. It has happened that certain parts of birds' wings were found in a site, and no other part of the animal was represented. In these cases it was thought that the birds' wings were being taken for the feathers. There may occur an obvious absence of a species known to occur in an area. This may be a cultural taboo or just a lack of recognition of the potentialities of that certain animal.

The conclusion to be drawn from the foregoing should be obvious: any bone found in archaeological association should be saved for intensive study. Approximately how many people occupied a site; what kinds of food were they eating; how did they butcher their meat; when were they living on the site--these are among the interesting questions the bones can answer.

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SAMPLING RULES FOR RADIOCARBON AGE DETERMINATIONS *

In order to obtain good samples for radiocarbon (C-14) dating, and thus obtain the best possible results from the dates, there are many factors which must be thoroughly considered.

Materials Suitable for Analysis

Nearly any material containing carbon is potentially datable from an analytical viewpoint. Certain materials high in carbon content have proven to be the most reliable for dating and are frequently available.

CHARCOAL: The high carbon content and ease of obtaining clean samples make charcoal the most desirable and reliable material in most cases.
WOOD: Wood or other cellulose material from plants is excellent material for dating.
PEAT: Peat provides excellent material for dating soil horizons or geomorphic features.
SHELLS: Marine and nonmarine shell material provides good carbon for dating. It is easily cleaned, but large samples are necessary.
BONE: This material is low in carbon, requiring large samples; it is difficult to analyze, but will provide good dates.
PAPER, PARCHMENT, CLOTH, ETC.: These are typical of many vegetable or animal products which will yield good dates if sufficient material is available.
INORGANIC CARBONATES: Calcium carbonate, caliche, or other inorganic precipitates may provide dates which cannot be obtained from other materials.
OTHERS: Other materials which may be dated include; atmospheric or dissolved C02 , leaves, pollen, nuts, hydrocarbon, organic liquids, animal tissue, carbonaceous soil, and many other carbon-bearing objects.

Age Limitations

Nearly all materials younger than 40, 000 years can be readily dated, and slightly older materials may offer qualitative dates under ideal conditions.

Sample Size Required

The size of sample necessary for C-14 dating varies with both the expected age and the carbon content: Older samples, or those low in carbon, should be larger. We prefer samples containing six or more grams of elemental carbon for good

*There are a number of laboratories specializing in radiocarbon dating, several of which offer guides to the collector. This article represents only one of these and is included as a general indication of desirable techniques in selecting samples. It is issued by Geochron laboratories, Inc., 24 Blackstone Street, Cambridge 39, Mass.

results, although samples with less carbon can be dated with lesser precision. Desired and Minimal amounts of some sample types are suggested below:

Type	Desired	Minimum
Charcoal	8 to 12 grams	1 gram
Wood	10 to 30 grams	3 grams
Shell	30 to 100 grams	5 grams
Peat	10 to 25 grams	3 grams
Bone	50 to 200 grams	5 grams
Carbonate	30 to 100 grams	5 grams
	(one ounce equals 28 grams)	

If sample is abundant, please collect more. It is always desirable to have enough material for a duplicate analysis; therefore, liberal samples are better. We do not return unused material unless requested to do so; however, it is kept on file, available to the sender upon request.

What Does C-14 Date Mean?

Most important in selecting samples for C-14 dating is a serious consideration of the true meaning of the date which will be obtained, and how this may be tied to the problem being investigated. Many potentially suitable samples will give clues to whether or not they will give useful dates. The measurement of C-14 concentration in a sample merely gives some measure of the time elapsed since the carbon in the sample was isolated from the carbon reservoir in which the sample formed. The following general conclusions about certain sample types can be made.

WOOD: The carbon in wood is fixed at the time the plant grew. Each ring of a tree is of a different age and will so date. Therefore, to date the death of a tree, the outermost rings are best. Or small twigs or branches are best. We still get only the date at which the tree died, rather than when the woody material was used in construction, a fire, or artwork. The possibility of fossil wood being used must be considered when sampling. While such situations are rare, they can only be detected in the field by those doing the sampling.

CHARCOAL: Since the carbon remaining in charcoal is the original carbon in the fuel, the above considerations apply also to charcoal. Fortunately, dead wood for fires is seldom preserved more than a few years, but fossil wood may have been used if it could be found. Charcoal from fires made with peat will clearly not date the fire but the much older peat instead.

SHELL: Shell samples may also be either contemporaneous or fossil with respect to an event of interest. If the shells were obtained from living animals, the dates will be representative of the time of collection. If the shells were obtained from beach litter for use in jewelry or construction, they will probably be somewhat older than the culture using them. Marine shells or other marine materials will be slightly older than contemporaneous land plant materials because of the finite mixing rate between atmospheric and dissolved C02. Fresh water shells or aquatic materials may be much older if dead carbon from limestone-bearing rocks is added to the fresh-water system.

Perhaps the most important generalization is as follows: We most often try to date an event by dating materials known to be associated physically with that event. It is only by the most careful field work that we can be sure that the material was formed contemporaneously with the event, and not merely used in conjunction with the event, having existed for many years previously.

Contamination: Inherent and Introduced

Inherent contamination exists in many C-14 samples and cannot always be avoided. It will take the form of more recent rootlets or lichens (perhaps still growing), detrital organic matter added since a sample was formed, insect alteration or bacterial action, migration of humic acids or other organic decay products, deposition of inorganic material such as calcium carbonate which may be much younger or much older. In brief, inherent contamination is possible by any natural process which may have added carbon in any form since the sample was presumably isolated. While carbon dating laboratories all have techniques to remove most of these contaminants, it is wise to consider these factors when selecting samples. It is also wise to inform those doing the laboratory work of your suspicion, if you suspect any such contamination.

Introduced contamination may also be present as a result of poor sampling practices or sampling difficulties. It may take the form of unintentional mixing of two portions of similar samples, wind-blown organic detritus collected with the sample, dirty or oily tools, wooden or plastic tools, excessive handling, poor packaging, use of preservatives, bristle brushes for cleaning, or many similar things. It can only be avoided by careful work and consideration.

Obtaining the Sample, Handling, and Shipping

When it is known that a sample might be utilized for C-14 dating, care should be exercised in obtaining the sample from its original environment. If possible only metal or glass should come in contact with the sample. The tools and containers should be clean and free of all organic material, greases, lubricants, preservatives, etc. It is recommended that samples be removed with metal trowels or spatulas and placed directly in new aluminum foil. The foil should then be wrapped around the sample, and the sample placed in a glass or metal container. The container should then be filled with crushed aluminum foil (not straw or paper, etc.) and sealed. Once the sample is so sealed, the containers may then be packed for shipment with paper or straw to protect them.

Do not handle the specimen at all if possible. Never use any preservative.

If the sample has to be cut from a larger piece of material, specially cleaned metal tools should be used. The cuttings should be caught directly on foil and wrapped as above. If a piece drops on the ground, throw it away. Your dates will come out better.

We have prepared these rules for your use in obtaining better samples for C-14 dating. We hope you will find them useful. If you have questions, please write.

GEOCHRON regularly provides C-14 age determinations as one of its services. Our charges for this service are as follows:

No. of samples submitted per year under contract	Cost per Sample	No. of samples submitted per year under contract	Cost per Sample
1	$160	31-50	$130
2-10	150	51-100	125
11-30	140	101 or more	120

Occasional users of radiocarbon dating will be charged at a rate varying with the number of samples they have already submitted during the current calendar year. The first sample will cost $160; the second through tenth will cost $150 each, etc., in accordance with the table above.

FORTIFICATIONS OF NEW YORK DURING THE REVOLUTIONARY WAR: 1776-1782

concluded

Michael Cohn Metropolitan Chapter

FORT WASHINGTON/FORT KNYPHAUSEN

Location**:** Located on the highest hill in Manhattan (183rd & Ft. Washington Ave.) this fort was to safeguard all of upper Manhattan. To the west it overlooked the Hudson, to the east the valley of Broadway and Laurel Hill. To the south the site overlooks all of Manhattan down to 120th street. Only to the north is it easily approachable by the ridge which holds the site of Ft. Tryon and the Cloisters.

Construction: Construction was begun by the Pennsylvania battalions aided by militia on the 20th of June, 1776. At that time it was laid out as a five-bastioned fort. A lunnette battery at Jeffry's Hook on the shore of the Hudson and the chevaux de frise in the river were added in August (1).

After its capture by the British, excess works were ordered leveled (2) but a map of 1778 shows extensive trench systems to the north and a barbette battery for two guns at what is now 184th and Bennett Ave. (3). The lunette battery is abandoned.

On May 18, 1779 a work party drawn from the regiments von Donop, 17th, 57th and Robertson's Corps built a new battery of six guns. (4)

When Washington scouted the fort on July 17, 1781 he saw it "well friezed, ditched, and abatissed" (5) while Jeffrey's Hood had "a small work with a guard house in it." (6)

History: The fort was thought highly of by Washington. On September 20, 1776 general orders stated: "The heights we are now on may be defended against twice the force we now have to contend with. . . “(7) General Charles Lee, that stormy petrel of the Revolution, thought less of it when he wrote Reed: "I cannot conceive what circumstances give Fort Washington so great a degree of value and importance as to counter-balance the probability or almost certainty of losing 1,400 of our best troops." (8) The British frigates Phoenix and Rose had by passed the Fort on July 12th. Fort Washington was cut off on all sides on October 27, 1776 when the forts in the Bronx fell to the Hessians (9). On November 16th the British and Hessians assaulted the outer lines and by noon the Hessians were hammering at the works themselves. The frigate Pearl in the Hudson cut off retreat across the river, and the commandant of Fort Washington surrendered on terms preserved by Serle (10).

(1) Alexander Graydon, Memoirs of his Time, Philadelphia 1811, pp. 133-134
(2) Knight OB
(3) Map of Kingsbridge Area, General Henry Clinton's Papers at the Clements Library (Clinton 151) Photo NYHS
(4) von Krafft ibid p. 85
(5) John C. Fitzpatrick (ed) The Diaries of George Washington, Vol. II, p. 239
(6) op cit p. 235
(7) Orderly Book, General Alexander MacDougall's Brigade, Sept. 21, 1776- April 8, 1777. Ms NYHS
(8) Lee papers ibid Vol. 5, p. 283
(9) G. B, Scull, The Journals of Captain John Montresor, New York Historical Society Collections 1881, p. 121
(10) Serle ibid p. 142

November 16, 1776

The Commander-in-Chief demands an immediate and categorical answer to his second summons of Fort Washington.

The Garrison must immediately surrender as prisoners of war and give up all their arms, ammunition and stores of every kind and send two Field Officers for so doing.

The General is pleased to allow the garrison to keep possession of their baggage and the officers to have their swords.

J. Paterson, Adjutant General

Agreed
Robert Magaw**,** Colonel 5th Pennsylvania Battn.
Commanding at Fort Washington

The Hessians were less pleased about letting the prisoners keep their possessions, and many of them were stripped of their wearing apparel (1).

On November 21, 1776, the fort was renamed Fort Knyphausen in general orders (2), but it saw no further excitement while under the British. It served primarily as headquarters, having bake houses, a hospital, etc.

Armament: Heavy, but exact number and caliber of guns unknown.

Garrison: 1776; 3rd Penn. Battn. , 5th Penn Battn. Sept. 1, Hutchinson's Regiment (3). 1778 three companies von Wissenbach. (4) November 9, Donop's and Trimbach's (5) July 26, 1779 Langrave's (6). October 1780 57th and Donop's (7) 1781 38th and 80th Regiment (8)

Archeology: Detailed excavations were carried out in 1922 and a map and photographs published (9). Buttons found include those of the 17th, 26th, 30th, 33rd, 35th, 38th, 42nd, 44th, 47th, 52nd, 54th, 64th, 74th, 80th, Royal Provincials, Queen's Rangers, Royal Artillery, and 3rd Pennsylvania. At Bennett Avenue we must add the Scotch Guards and the 70th Highlanders.

Shot recovered included exploded shells, grape, bar and chain shot and solid projectiles of six and sixteen pounds.

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(1) The Kemble Papers, Collections of the New York Historical Society 1883 p. 100 (Kemble was aide-de-camp to General Howe)
(2) Knight OB
(3) Graydon ibid pp. 133-34
(4) Clinton Map 151
(5) Kemble op cit. p. 100
(6) Robertson ibid p. 239
(7) von Krafft ibid p. 122
(8) von Krafft op cit p. 146
(9) William Louis Calver and Reginald Pelham Bolton, History Written with Pick and Shovel, New York Historical Society 1948, pp. 45-53

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ESAF MEETING

The Eastern States Archeological Federation Annual Meeting will be held this year on November 7 and 8 at Attleboro, Massachusetts, which is within convenient driving range of most N.Y. S. A. A. members. N. Y. S. A. A, should be well represented not only in attendance but in papers presented. The program chairman is Dr. C. G. Holland, 2206 Shelby Drive, Charlottesville, Virginia.

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The New York Archeological Association

By Author and Title

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*Compiled by Mrs. Harry D. Whitacre, Mrs. Kenneth F. Wood, and Mr. Daniel M. Barber, Lewis Henry Morgan Chapter.

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