

Burials and Bones: A Summary of Burial Patterns and Human Skeletal Research in Newfoundland and Labrador

Sonja Jerkic

Volume 9, Number 2, Fall 1993

URI: https://id.erudit.org/iderudit/nflds9_2art04

[See table of contents](#)

Publisher(s)

Faculty of Arts, Memorial University

ISSN

1198-8614 (print)

1715-1430 (digital)

[Explore this journal](#)

Cite this article

Jerkic, S. (1993). Burials and Bones: A Summary of Burial Patterns and Human Skeletal Research in Newfoundland and Labrador. *Newfoundland Studies*, 9(2), 185–212.

Burials and Bones: A Summary of Burial Patterns and Human Skeletal Research in Newfoundland and Labrador

SONJA JERKIC

DURING THE PAST TWENTY-FIVE YEARS, the study of burial sites and human remains from Newfoundland and Labrador has not only added detail to a picture of culture history and prehistory for the province, but it has provided some detailed information for a number of "firsts" for both Canada and the world. As examples, (1) L'Anse Amour in southern Labrador is the site of one of the oldest burial mounds in the world, with unusual elements concerning its construction; (2) Port-au-Choix, on the west coast of the Northern Peninsula, is the site of the largest and culturally richest Archaic Indian cemetery in northeastern North America; (3) most of the information on the skeletal biology of the Dorset Palaeoeskimo is drawn largely from the limited material found on the west coast and northern peninsula of Newfoundland; (4) one consequence of one of the earliest European economic endeavours in the New World — an intensive 16th century Basque whale fishery — was found in the Basque cemetery at Red Bay, Labrador; (5) the origin and eventual fate of the Beothuk, the people indigenous to the island at the time of protracted European contact, may be answered through genetic and medical studies.

Human osteological research in Newfoundland and Labrador has only just passed from infancy into young adulthood. Until 1968, a knowledge of the physical characteristics and lifestyles of prehistoric and historic residents of the province was drawn primarily from the ethnohistorical descriptions of Beothuk physical characteristics and burial patterns published by Howley (1915) and a brief report by Harp and Hughes (1968) on Dorset Palaeoeskimo skeletal material. Time depth for people living in Newfoundland and Labrador reached back a few hundred and at most, a few thousand years. Today, based on archaeological research, there is

cultural evidence for people inhabiting this area in excess of 9000 B.P. (before present) and skeletal evidence to 7000 B.P. In the twenty-five years since James Tuck first excavated and James Anderson analyzed the human remains from the Maritime Archaic cemetery at Port au Choix, cultural, behavioural and biological knowledge concerning past peoples in Newfoundland and Labrador has been drawn both from systematic investigation of how people buried their dead *and* the skeletal remains themselves. In those two and a half decades, analysis of human skeletal remains, in combination with archaeological investigations of the associated cultures, has widened and deepened our perspective on the past peoples of this province.

BURIAL PATTERNS AND SKELETAL BIOLOGY

The manner in which a group of people treats their dead can reveal a great deal about the living people and their culture. Not only are their physical characteristics and genetic relationships manifested on their skeletons, but behaviour and beliefs such as the supernatural aspects of their world view, their perception of an afterlife, their social organization including age and sex status differences, and their technology and economy as reflected by burial goods may be learned from the burial patterns. The very fact that people bury their dead may indicate a desire as simple as protecting the body from physical damage or destruction, *e.g.* carnivore activity, or as complex as keeping the body intact for possible needs of the spirit after death.

The manner in which people endeavour to carry out these purposes may vary from culture to culture. Evidence derived from the earliest burial patterns in Newfoundland and Labrador indicates a succession of burial styles through time from 7000 years ago to the present. This corresponds to the non-mortuary archaeological conclusions for a succession of different cultural groups dating even earlier, from 9000 years ago to the present.

In contrast to the perception of precise data from archaeological artifacts associated with burials, many people may think of the skeleton as merely a framework to which the more important soft tissues, those allowing for maintenance of life and personally identifiable characteristics, are attached and protected. However, the human skeleton alone can offer a wealth of information concerning the life and times of an individual. Sex, age at death, ethnicity, stature, as well as genetic variations, past nutritional deficiencies, trauma, evidence of disease, and even some activity-related characteristics may be learned if the skeleton is complete and well-preserved. In addition, cultural practices may have left their marks on bones. Finally, new advances in technology are permitting analysis of isotopes in bone tissue which can provide clues concerning diet. In some bone tissue hundreds and even thousands of years in age, fragments of DNA are preserved and can be retrieved for study of the genetics of individuals or populations. Therefore, studies of human skeletal remains has the potential to provide a great deal of

information concerning *individuals* and their lives within a culture, which archaeological evidence alone cannot. Together, combined studies of burial patterns and skeletal biology has provided insights into the lives of both individuals and groups of people who have inhabited this province through millennia.

MARITIME ARCHAIC

L'ANSE AMOUR, LABRADOR. The burial at L'Anse Amour is a good example of the information which can be derived when data from both archaeology and skeletal biology are combined. As a burial it is important both within and beyond Newfoundland because it represents the earliest human remains from the province as well as one of the earliest burial mounds in the world. The analysis of burial context and the skeleton exemplify the interconnection of archaeological and osteological data which together have yielded additional unexpected information.

Located on a windswept beach terrace on the Labrador shore of the Strait of Belle Isle, the burial at this site is in a low, rock-covered human-made mound and it currently represents the oldest mound burial in the world at this level of cultural complexity. Radiocarbon dated between 7000 and 7500 B.P., the importance of its early date is compounded by the knowledge that it was constructed by hunter-gatherers. Burial mounds elsewhere in the world range from small to large earthen structures such as those found in North American Adena culture (2500-400 B.P.) to stone tombs covered by earth such as those found in northwestern Europe (c. 6500-4500 B.P.) to massive stone pyramids found in Egypt (c. 4650-3500 B.P.). Those burial structures were generally built by sedentary or semi-sedentary agriculturalists and often were the result of fairly sophisticated technology or planning and the effort of many people. In contrast, the mound at L'Anse Amour was relatively small and unobtrusive (it went unrecognized as a burial site, even by archaeologists, until 1974) and was likely built by a small group of migratory hunters and gatherers for a single individual.

The burial was located under a circular sand mound, which was over 10 meters in diameter and approximately one meter high at its highest point. The mound was covered by closely placed large cobbles forming a cap approximately 8-10 meters in diameter. Below these, a second and third layer of boulders occurred in the central part of the mound. Still further beneath that, two parallel lines of upright boulders formed an empty cist. Finally, over 1.5 meters below the top of the mound, a skeleton was uncovered.

Analysis of the poorly preserved skeletal remains revealed that the individual had been a youth, approximately 12-13 years old (McGhee and Tuck 1975:85). Due to the incompleteness of the skeleton and the youth of the individual, it was not possible to determine the sex. Placement of the body for burial had been unusual since it was face down, extended rather than flexed, and with a large, flat rock placed on top of the middle of the back (McGhee and Tuck 1975:87). Although

face-down burials have been found at various prehistoric sites around the world, it is relatively rare, and no other Maritime Archaic skeleton has been found in that position.

Artifacts associated with the skeleton were clearly of Maritime Archaic cultural type and included a nest of knives and spear points of bone and chipped stone; an ivory walrus tusk; a bird-bone flute or whistle; ochre and graphite paint-stones with an antler pestle for grinding the minerals; and an ivory harpoon head and toggle. Radiocarbon dates on charcoal found on either side of the body yielded dates between 7000 and 7500 B.P. (McGhee 1976).

This combination of characteristics for the L'Anse Amour burial proved to be extraordinary for a number of reasons. First, although the impressiveness of a mound only one meter high when compared with mounds tens of meters or more in height is small, this one nonetheless required time and effort to transport the additional sand and rocks to the site to mark this grave. No such similar effort has been documented at this early date anywhere else in the world. Second, although burial mounds small and large, simple and complex, have been investigated in various parts of the world, they have usually been associated with more complexly organized societies. The L'Anse Amour burial, associated with a hunting and gathering Maritime Archaic society, indicates that complex burial patterns may be found in more simply organized groups (Tuck and McGhee, 1976).

Furthermore, data from other prehistoric sites suggest that burials in mounds are normally associated with people of status within a group, usually adults of some wealth or influence. The fact that the earliest excavated burial mound was constructed for a youth leads to at least two possible conclusions: one, that a youth might have had some positive power or influence in a hunting and gathering society with which we are unfamiliar but which prompted the group to recognize the loss and mark it in a tangible way, or two, that a youth might have been associated with an incident or incidents of negative power which required that the death be marked so that further association might be avoided. The latter interpretation may have some merit when viewed in light of the large rock which had been placed on the back of the individual, perhaps as a sign of weighing down both the body and spirit, so that they would no longer affect the living.

Most of the information from the L'Anse Amour burial site is archaeological. However, without the data of age from the skeletal material, some of the more intriguing interpretations of this site would have been lost. In the same way, skeletal analysis of the human remains from the burials associated with the various peoples moving in and out of Newfoundland and Labrador through the past 7000 years adds to the information and interpretations which are possible.

OTHER MARITIME ARCHAIC BURIAL PATTERNS: The Maritime Archaic cemetery at Port au Choix is a site which has provided a wealth of both archaeological and biological data and which has the prospect of continuing to yield new information. Located on the west coast of Newfoundland's Great Northern Peninsula, it appears

to have been an area used repeatedly as a burial site for Maritime Archaic hunting and gathering bands between approximately 4500 to 3400 B.P. (Tuck 1976). A combined total of at least one hundred and seventeen individuals were recovered in excavations conducted by James Tuck between 1968 and 1978. Similar cemeteries from the same time period have been found elsewhere in northeastern North America *e.g.* the Turner Farm site in Maine, the Neville site in New Hampshire and others (Bourque 1976; Barbican and Magennis 1994; Robinson 1992) in Maine, but Port au Choix is unique in the excellent state of preservation of the human skeletal material as well as the bone, antler and ivory artifacts which had been buried with the dead.

Burial was in sand, surrounded and overlain by limestone flags forming a cist. Placement of the body or bodies within the cists was variable, but all styles of placement found at Port au Choix were also typically found in other North American prehistoric populations. At Port au Choix, both primary and secondary burials were found. Within the primary burials, *i.e.*, interment when soft tissue connects all or most of the skeleton and therefore the bones remain in correct anatomical position, the remains of either single or multiple individuals were present. Within the secondary burials, *i.e.*, when soft tissue had decomposed and only the bones were collected and interred in bundles, only single individuals appear to have been present. Primary burial body positions ranged from extended and supine through loosely to tightly flexed, lying on either side. There was no apparent pattern to the orientation of the bodies, although the majority appear to have been heading from northeast through north, northwest, and west. There was no apparent association of burial style with age or sex.

The burial pits appear to have been dusted with red ochre prior to interment of the bodies. The dead were placed in the pits, perhaps wrapped in a shroud or dressed in their own clothing. Grave offerings consisting of practical, decorative items, possibly of magico-religious significance, were placed with the bodies with no apparent relationship to sex or age. A second sprinkling of ochre over both the body and artifacts occurred before the final covering with sand and limestone slabs (Tuck 1976:96)

Carbon-14 dates indicate that the burial site may have been in use repeatedly over a period of approximately 1500 years. In the initial excavation by Tuck in 1968, three areas of burial concentration, called loci, were isolated, perhaps relating to family, clan, or temporal groupings. The earliest radiocarbon date of 5120 \pm 120 B.P. came from Locus II and the most recent, 3410 \pm 100 B.P., from Locus I.

This pattern of burials found at Port au Choix corresponds to similar Archaic burial sites in other parts of northeastern North America (Bourque 1976; Barbican and Magennis 1994).

SKELETAL BIOLOGY: The Maritime Archaic skeletal material, a large sample representing adults and subadults, males and females, has been and is continuing to be studied from a number of different perspectives since Anderson's initial

description in 1976. These investigations are continuing to provide increasing knowledge of the physical characteristics of these people along with insights into their health, their activities, and their biological relationships to their contemporaries elsewhere in Canada as well as to succeeding peoples who lived in Newfoundland.

As described by Anderson (Tuck 1976), the Port au Choix Maritime Archaic people resembled other prehistoric Native Indian peoples of North America. Height ranged from 150.7 to 174.0 cm., with males averaging 167.2 cm. and females 160.2 cm. Skulls were usually large and robust, slightly long-headed in relation to width, and with a low skull height in relation to both length and width. Faces were broad with somewhat narrow noses.

They were robust, indicating a physically active life. Marshall (1990) looked at evidence for degenerative joint disease (osteoarthritis) on the adult skeletons from Port au Choix as reflective of activity during life. She found that this degeneration was variable in intensity and distribution, both on the joints affected and between males and females. Although it is impossible to know the precise activities in which these prehistoric people were engaged, comparisons of the Maritime Archaic distributions of arthritis with data collected by Merbs (1983) for the Sadlermiut Inuit seem to reflect comparable patterns. Since there are ethnographic descriptions of Sadlermiut physical activity, Merbs was able to associate intensity of joint degeneration on Sadlermiut skeletons with particular activities which were practiced among the males and females of this group. Since a hunting and gathering way of life, practiced by both the Sadlermiut and the Maritime Archaic peoples, necessitates certain similar sex role activities, Marshall used the description of Sadlermiut activities as a model for the Port au Choix population. From the distribution and frequency of joints affected by arthritis, she speculated that Port au Choix males apparently engaged in intensive use of the upper body, reflecting actions such as spear throwing, heavy lifting, and repetitive, stressful work with their hands, such as toolmaking and preparation of lines from hide and sinew. Females may have also made use of the upper body in scraping and preparing hides, grinding or pounding vegetable material, and the finer hand work of sewing hides.

Reader (1990) compared the Port au Choix people and a Thule Inuit sample from Labrador for differences in dental attrition and in arthritis in the mandibular joint. Attrition, the wearing down of the chewing and biting surface of teeth, was quite extensive in adults in both groups. This was interpreted as the outcome of a coarse and fibrous diet requiring much chewing, as well as secondary use of the teeth in cultural practices, *e.g.* chewing hides to soften them. Correspondingly, an increased degree of arthritis of the temporomandibular joint is associated with increased levels of attrition, *i.e.*, the more the teeth are used and worn down, the more the joint of the mandible is used and is prone to degeneration. However, Reader noted that in individuals exhibiting equal attrition the Port au Choix population exhibited more advanced arthritis of the T-M joint. He speculated that

the basis for this difference might lie either in the cultural practices for which the people used their teeth or to genetic factors of smaller, less stable masticatory muscles in the Port au Choix group (Reader 1990:64).

Aside from arthritis, the frequency of pathology on the skeletons was relatively low at Port au Choix, considering the numbers of individuals present. Anderson (Tuck 1976:130-31) noted only three examples of healed fractures of the limbs, four of the ribs, four compressed vertebrae, one small depression fracture of the skull, and one of the nose. Activities related to hunting and gathering often lead to a higher frequency of fractures than was evidenced at Port au Choix.

Anderson also observed three examples of localized addition of bone to the surface of three skulls, etiology unknown. There was also an expansion or enlargement of the end of a clavicle and the head of a femur.

In 1987, Kennedy provided evidence for another example of pathology from this population, a possible case of histiocytosis X observed on the fragmentary skeletal remains of a child, approximately three year old. Even today this is a rare, often fatal, condition of unknown origin. It manifests itself in single or multiple benign lesions in either soft tissue or bone, commonly in children up to age four. Death occurs due to impairment of liver, blood, or lung function. Although other pathologic conditions produce similar manifestations, Kennedy concluded histiocytosis X was the best diagnosis based on the evidence. If correct, this would be the earliest example in the New World (Kennedy 1987:109).

Analysis of the primary dentition of the immature skeletons from Port au Choix may provide another element regarding nutrition, genetic makeup, or behaviour for these people. Mark Skinner of Simon Fraser University (pers. comm.) has analyzed the primary dentition of skeletal populations in the Old and New Worlds. In every instance he has noted the presence, in varying frequencies, of a defect in the enamel crown of the primary canine tooth. He has proposed that it may be a genetic anomaly and therefore part of the gene pool of virtually all populations that he has studied. It may also be the result of a nutritional deficiency, either in the mother during later fetal development or in the newborn during the first months of life, during the period when the canine crown is forming. However, there were no examples of the defect in any of the Port au Choix specimens. This may be the result of chance, that is, no skeletons with this defect happened to be excavated here. But if the defect has a genetic basis, it may reflect something about the genetic makeup of this somewhat isolated group. Since it may also relate to how well-nourished the mother or newborn was, it may denote well-fed people in this population.

Life expectancy at birth for these people was not high. As calculated from the initial 89 skeletons described by Anderson (1976), 32, or approximately 33% of this sample, were under the age of two years at the time of death. But, of those 57 who survived infancy, seven, or 11.5%, lived to an estimated age of 55 years or older.

Macroscopically, Anderson noted only one example of a skeletal pathology having a possible relationship to diet, *i.e.* the presence of cribra orbitalia which is

usually associated with severe chronic anemia brought on by blood loss or an iron poor diet. However, Evans (1991) pursued evidence for diet deficiencies or poor health in the Port au Choix population through analysis of the presence of Harris lines (growth arrest lines, growth recovery lines, radiopaque lines) in x-rays. These dense lines of bone, formed during growth at the ends of long bones, represent periods of nutritional, physiological, or psychological stress. They can be observed only in x-rays and individuals may display none, one, or multiple lines, each line representing a probable period of stress. Periods of acute disease or short term nutritional deprivation are usually cited as probable causes.

Evans observed evidence for Harris lines in at least 10% of this Maritime Archaic population. It is nearly impossible to determine, from skeletal material only, what type of episodes may have produced the type of stress resulting in short term cessation and recovery of growth. However, disease or food shortage are reasonable conclusions. There was no difference in the frequency of these lines in males and females, indicating that neither sex may have been singled out in terms of food availability nor more prone to disease (Evans 1991: 84). However, she did note that, in individuals displaying Harris lines, a high frequency of lines developed between ages one to two years and also between nine to twelve years. The first period may reflect the time of weaning of children. The shift from breast milk to a virtually adult diet may be stressful physiologically, resulting in diarrhea and weight loss. Psychologically, it also produces stress in terms of deprivation of the contact of nursing. The second period, however, "... is difficult, if not impossible, to attribute [to] either cultural or biological factors...of stress during late childhood" (Evans 1991:82). The Maritime Archaic culture or environment may have had an impact at this time of an individual's life of which we are not, at present, aware.

Skeletal biology can also provide possible information beyond the purely descriptive. Through statistical analysis of the frequency of genetic variations which may be observed on individual bones or by making statistical comparisons of measurements of skeletal parts, it is sometimes possible to understand the biological relationships of individuals or groups and, by extension, the behaviour of the people in the past. Using both metric and morphological traits, Pfeiffer (1977) made some tenuous biological links between the Maritime Archaic people of Port au Choix and contemporary Archaic peoples at Frontenac Island in central New York State. Since speculations on origins for the Maritime Archaic people in Newfoundland have been based on artifactual evidence, tentatively traced to Labrador and the north shore of the St. Lawrence (Tuck 1982), Pfeiffer's research was the first to provide a statement on connections of the people and their culture over a greater distance based on biological relationships.

Using similar techniques, Kennedy (1981) studied adult skeletal material from Port au Choix for the purpose of trying to determine the probable marriage patterns for people from that site. Comparing metric and morphological variables from eighteen female and twenty-two male adult skeletons, she determined that the females displayed more genetic variability than the males. This would support her

conclusion that the Port au Choix people were at least patrilocal in their residence patterns, *i.e.*, the males remained in the group of their birth while female marriage partners came from other groups, bringing in slightly different genetic characteristics.

Investigations of the Maritime Archaic skeletal material from Newfoundland, then, provide us with a fairly comprehensive picture of people living in Newfoundland between 5000 and 3500 years ago. Similar in general characteristics to other Native American Indian groups, there is some possible genetic connection to contemporaneous groups as far west as the Great Lakes. Marriage practice seemed to have followed a patrilocal pattern of bringing wives into the band from other groups. Although infant mortality appears to have been high, if an individual survived to adulthood, chances were good that he or she would live to a relatively old age. The diet appears to have been good: tough and fibrous but nourishing. Periods of dietary stress for some, however, may have occurred at weaning and near adolescence. Physical activity was intense and slightly different for males and females, resulting in slightly different patterns of degenerative joint disease. Yet the activity did not seem to result in particularly high frequencies of fractures. Major infectious diseases affecting the skeleton were not in evidence. While this does not indicate that the people of Port au Choix were disease-free, it suggests a moderately good level of health.

The people appear to have inhabited and exploited the same general area for at least 1500 years. Possibly regarding the Port au Choix site as "special" at the very least, they returned repeatedly through the millennia to bury their dead with ceremony and ritual.

DORSET PALAEOESKIMO

BURIAL PATTERNS: The Palaeoeskimo presence has been noted in Newfoundland and Labrador, at its earliest in northern Labrador around 4000 B.P., eventually spreading south to the island as the climate cooled by 2800 B.P. Although they were hunters and gatherers like the Maritime Archaic peoples, the Palaeoeskimo material culture differs from the Maritime Archaic in time and in technology. The biology of the two groups also differs. Like other aspects of their culture and technology, the Palaeoeskimo burial patterns which are known from this province were distinctly different from those of the preceding Maritime Archaic peoples.

As summarized by Brown (1988) and Melbye (1993), only a small number of recognized Palaeoeskimo burials have been found here. These are from Lane's Cove, Englee; Pumbley Cove, White Bay; and Crow Head cave, Gargamelle rockshelter, Back Arm site, Eastern Point Rockshelter, and Phillip's Garden, all near Port au Choix. The location of these sites in protected areas such as caves or rock shelters, often near or overlooking water, and away from habitation sites seems to indicate a preference of Palaeoeskimo peoples for such locales. In Palaeoeskimo

sites elsewhere in the Arctic, burials have been found in middens, cists, or cairns. The use of caves or rockshelters for burial seems to be most prevalent among the Palaeoeskimo in Newfoundland and, therefore, may possibly be a regional style (Brown 1988:95).

Since most of these sites were only systematically excavated following disturbance by collectors, it is not always possible to say with certainty if a specific burial was primary or secondary. Orientation of the body is also difficult to ascertain, but possibly was determined by the size and placement of the cave or shelter. Interments were both single and multiple but, where multiple, it is not always possible to conclude if this occurred simultaneously or sequentially.

The remains were placed in these shelters on the ground or, possibly, covered by a thin soil layer. Included were grave offerings ranging from utilitarian, to functional-symbolic, to decorative or symbolic. In the Newfoundland sites, grave goods also included miniatures of utilitarian objects such as harpoon heads and sled runners, which may represent models of actual items which had belonged to the deceased but were deemed too useful to bury with the dead (Brown 1988:96).

SKELETAL BIOLOGY: Melbye and Garisto (1993) have studied all the available Palaeoeskimo skeletal material which has been recovered in Newfoundland. However, due to disturbance and collection of bones and artifacts from the burials prior to archaeological excavation, the information which has been retrieved is incomplete and interpretation is generally speculative.

The remains of at least 21 individuals were found at the seven Palaeoeskimo sites. Of these, only two skeletons, one from an infant and one from an older subadult, are complete. Since some of the skeletal characteristics associated with adults in a group have not yet developed on subadult bones, these complete skeletons cannot provide data especially useful in describing the Palaeoeskimo people.

The nineteen adult individuals are all represented by incomplete and fragmentary skeletal material, some only by a single bone. None have enough skeletal remains present to give an adequate description for height, body proportions, or cranial characteristics on even a single individual. The remains from Pumbley Cove contain the most complete cranial material and even this lacks a mandible, making the facial skeleton, which can reveal the most about both individual and group ethnic relationships, incomplete. However, based on subtle characteristics on the skeletal fragments, Melbye and Garisto (1993) have indicated some possible skeletal similarities between the Palaeoeskimo and the Thule/Recent Inuit (see below).

However, three cases of pathological changes which have been observed on these fragmentary remains provide a small window on examples of health, trauma, and congenital or cultural practice which may have been part of the lives of these people. (1) One of the individuals from the Crow Head cave displayed the porotic hyperostosis associated with iron deficiency anemia. This type of deficiency may

be the result of an iron-poor diet, but it may also occur when there is chronic blood loss, such as slow but persistent internal bleeding or hemorrhage following childbirth. Anemia may be due as well to metabolic problems in absorbing iron in the diet. It is generally difficult if not impossible to determine the actual cause of the anemia solely from skeletal material. Therefore, in this case, it can only be noted at this time that there was an iron deficiency affecting the health of this individual.

(2) The subadult from the Englee site exhibits a possible impact fracture of the skull. As was the case with the example of anemia, it is not always possible to reach a conclusion from the pathological change. In this case, it is very difficult to determine if a fracture occurred accidentally or purposely. It is even difficult to conclude whether this might have been the cause of death despite its presence on the skull.

(3) The incomplete adult skull from Pumbly Cove displays a very marked asymmetry. No human skull is completely symmetrical. The human propensity to use one side of the body more than the other, such as in handedness, results in one side of the skeleton being more robust and slightly larger than the other. However, in the case of the Pumbly Cove individual, the asymmetry present exceeds the range of what is considered normal. Such torsion in the shape of the skull may be the result of a congenital lesion in one of the muscles on the side of the neck, a condition termed torticollis. This results in uneven muscle action on the two sides of the skull, thus changing the skull's shape. Torticollis may possibly occur as the result of trauma during childbirth or from malposition of the fetus *in utero* (Skinner *et al.* 1989). In the Pumbly Cove skull, the marked asymmetry appears to be the result of this type of muscular damage, although it is difficult to determine the precise origin for the pathology of this individual.

A knowledge of Palaeoeskimo skeletal biology is obviously limited by the incomplete, fragmentary remains. However, as limited as the information is, it is possible to determine that they were a distinct group both culturally and probably physically. Their burial patterns were complex and likely ritualized as evidenced by the grave goods but were completely dissimilar to the earlier Maritime Archaic patterns. In the same way, there are subtle indications that, physically, the Palaeoeskimo represent an Inuit rather than Indian population which migrated into Newfoundland and Labrador.

RECENT INDIAN/BEOTHUK

BURIAL PATTERNS: The prehistoric/historic people most closely associated with Newfoundland are the Beothuk, the group resident on the island when Europeans first began fishing and settling here. Beothuk ancestors may have come to Newfoundland from across the Strait of Belle Isle between A.D. 1 and A.D. 500, sharing the island and its resources with the late Palaeoeskimo peoples (Pastore 1992). Although hunters and gatherers like the Dorset, these Beothuk ancestors appear to

have developed hunting and living patterns distinct from the Palaeoeskimo group which allowed co-exploitation of the area for at least half a century. It is also possible that during that period aspects of technology as well as other cultural elements such as burial patterns may have diffused between these groups.

At one level, there is more information available regarding Beothuk burial practices than preceding groups because there exist documentary descriptions written by eighteenth and nineteenth century Europeans residing in Newfoundland. W.E. Cormack, as cited in Howley (1915:192-194), gave the most detailed account of the various ways in which the Beothuks interred their dead in the early nineteenth century. The body of the deceased was almost always wrapped first in birch bark or skins before it was interred in one of four manners.

- 1) The most common practice was to place the body on or slightly in the ground, then to cover it with stones. If the soil was soft and easily dug, the remains were buried deeper and no stones covered the area.

- 2) The body was placed in an extended position on a scaffold approximately 1.3 meters from the ground, sometimes surrounded by a type of crib made from squared beams.

- 3) The body was placed in a flexed position on the right side on the ground enclosed by a "box" made of small posts laid horizontally atop each other.

- 4) The body was put in larger wooden "tombs" or repositories, resembling a hut, floored with squared poles and roofed over. Cormack discovered the remains of Demasduit (Mary March), her child, and her husband, Nonsabusut, in such a structure.

Cormack notes that the location of any of the burials was usually at the seacoast in a secluded area. The sites were specifically chosen by the Beothuk and they would bring their dead from some distance to bury them in these locations. Grave goods were placed with the dead although Cormack remarked that, with the women, "...they bury only their clothes." (Howley 1915:194)

Descriptions of specific Beothuk burials, either by collectors or archaeologists, have confirmed only some of what Cormack recorded. Despite the minimum of 1000 years that the Beothuks and their ancestors inhabited Newfoundland, only 23 documented burials are known, and none of these has been systematically excavated by archaeologists. The only evidence which is available has been recorded by Howley (1915) from collectors of the material, and collected by archaeologists from disturbed sites.

Based on this data, the evidence for Beothuk burials comes predominantly from sites around Notre Dame Bay and the Bay of Exploits, two sites in Placentia Bay and possibly one in Fortune Bay. With one possible exception, all were located near sheltered coves or inlets, on the ground in caves or rock shelters, like the Palaeoeskimo. Bodies were often sprinkled with red ochre. In one instance, at Long Island in Notre Dame Bay, a low birch bark canopy, somewhat like a wigwam but smaller, was constructed over the bodies within a cave. The presence of birch bark fragments at most sites supports Cormack's description of a bark shroud. A young

child from Burnt Island, Notre Dame Bay, was wrapped in a leather legging (Whitehead 1987:27).

Body position was varied, ranging from flexed to extended to one, from Comfort Cove, Bay of Exploits, described as in a sitting position (Howley 1915:332). For the grave sites which have been recorded, roughly fifty percent contained remains of a single individual and fifty percent contained multiple individuals.

Grave goods were utilitarian such as arrows, harpoon heads, and birch bark containers, or magic/symbolic, often represented by stylized Beothuk bone pendants. In the child's burial from Burnt Island, miniature bows and arrows, and two small birch bark canoes may represent either children's toys or the type of miniaturization described for the Palaeoeskimo.

SKELETAL BIOLOGY: As with the burial patterns, it could be assumed that enough is known of Beothuk physical characteristics from historical description and documentation to make skeletal analysis superfluous. Such is not the case. From early descriptions recounted in Howley (1915:10-16), Beothuk characteristics ranged from a size of goodly stature and well-made to ordinary middle size. Colouring was depicted from white or fair to the colour of soot. Even descriptions of a single individual, Shawnadithit, who spent some years with Europeans, varies from being a tall fine figure who stood six feet high to a woman who was five feet five inches in height (Howley 1915:221). Also according to Howley, when Mary March was captured and her husband shot, his body was measured at six feet seven and one half inches (1915:100). Consequently, it appears that skeletal evidence should provide at least the basic framework to begin to build a picture of the Beothuks.

Unfortunately, Beothuk skeletal material available for study is scanty. Of the twenty-three burials described above, the location of skeletal remains is known for only thirteen individuals. Based on unpublished skeletal data collected by this author, of these thirteen, five are too fragmentary to provide adequate information concerning physical characteristics, two are from immature individuals still developing their adult traits, and four are represented almost exclusively by skulls.

The two remaining skeletons are both from Comfort Cove, Bay of Exploits. One is complete but the second is incomplete and fragmentary. Both individuals were adult, male, and distinctly robust with heavy areas of muscle attachment indicating marked physical activity of both upper and lower limbs. Both were tall, between 177 and 180.7 cm. (5'9" to 5'11") but, obviously, not within the extreme heights described historically. Such height places them within the ranges of Indian rather than Inuit physical types.

Both skulls display quite projecting brow ridges, a deep indentation at the articulation with the nasal bones, a sloping forehead, and comparable wear patterns on the teeth. The conspicuous similarities in the profiles of the face and neurocrania for these two individuals could point to a possible close family or band relationship,

supported by both being found at Comfort Cove. Similarly, it is also conceivable to reflect on Kennedy's (1981) interpretation of Maritime Archaic patrilocal marriage patterns. The closer male genetic similarities as described in that pattern might well be reflected among these particular Beothuks, also.

Although there is no pathological evidence for cause of death, both apparently died at a relatively early age, approximately 35 years and between 25 and 30 years of age, respectively.

The two skulls from these Comfort Cove skeletons plus the remaining four skulls from other sites support the conclusion that, physically, the Beothuk were Indian rather than Inuit in their cranial characteristics. The neurocrania had a continuous curve from side to side rather than being "keeled" like the Inuit (see below). The zygoma (cheekbones) were neither as wide nor as projecting as found among the Thule skeletons (see below), and in some cases, were quite gracile, resulting in a narrow face. Attrition on the teeth, particularly the two from Comfort Cove, is very marked but relatively uniform. This may be evidence for attrition resulting from a tough fibrous diet requiring heavy chewing rather than excessive use of the mouth and teeth in tool use and other behaviour.

Archaeologists and ethnohistorians are providing further evidence that, following European contact and settlement, the Beothuk retreated inland away from many of the coastal areas which had provided sufficient dietary resources to them through the centuries. Historic documents also record the spread of disease, most notably tuberculosis, from the settlers to the Beothuk. However, in this small sample of skeletons there is no evidence for either dietary stress or disease. There is also no evidence for death by trauma.

However, as will be discussed in the last section of this paper, the partially mummified remains of a young child, recovered from Burnt Island, Notre Dame Bay, may provide the potential for gleaned evidence on the health of the Beothuk during their last decades.

THULE/RECENT INUIT

BURIAL PATTERNS: A fourth group, culturally distinct from the preceding groups, entered Labrador by A.D. 1450 (Schlederman 1972). Initially a migration of Thule Inuit peoples from the western Arctic whose descendants are the Labrador Inuit of today, they brought with them a technology and culture suited to the harsher coastal environments of Labrador. Similarly, their burial practices had evolved to suit surroundings in which the ground seldom thawed to any depth and where there was an abundance of boulders.

The Thule and historic Inuit, by necessity, laid their dead directly on the ground since thawing of permafrost, even in midsummer, was not deep enough to allow for interment below the ground. Evidence recovered from Rose Island and Upernavik Island in Saglek Bay, Labrador (Way 1978), points toward situations in

which the living laid the body directly on the ground, sometimes close to cliffs. Occasionally, bodies would be placed in crevasses in the rock as partial protection. In either case, the bodies were then covered by boulders or a rock cairn was constructed around and over the corpse.

The predominant burial style was primary single interment, extended and supine. However, some examples of multiple interments in a single cairn at the same time, or multiple interments sequentially, involving later use of an already constructed cairn, were found. Occasionally, evidence of secondary burial was also present, possibly indicating that death occurred when it was impossible to construct a cairn and the remains were then buried after the flesh had partly or completely decomposed (Way 1978).

Personal as well as utilitarian objects were placed in with the dead resulting in some obvious variation in grave goods based on sex. Artifacts ranged from women's knives and men's knives, hunting or scraping tools, ornamental and magic objects, and, in some cairns, even a komatik (sled). In addition, grave goods not related to the sex of the deceased probably reflect gift giving of the survivors to the dead (Way 1978:298).

SKELETAL BIOLOGY: The skeletal analysis of the Thule skeletal material from Saglek Bay, Labrador, corresponds to similar material from other parts of the Arctic (Way, 1978). The people were Inuit rather than Indian in their physical characteristics. They were long headed, with a relatively wide facial area across the zygoma (cheekbones). Some of the cranial vaults displayed a "keeled" formation along the sagittal suture. This characteristic refers to a vault which forms an inverted, rounded v-shape along the midline from front to back. Both males and females were short compared to modern standards, between 158 and 166 cm., but this is within the range of other Thule populations.

Tooth wear was marked and uneven in both males and females, due partly to eating tough and frozen meats and fish. In addition, use of the teeth for softening skins and for other tool use, added to the uneven attrition. Because attrition was sometimes rapid, tooth loss due to abscessing was frequent (Way 1978:298).

Reader (1990) indicates that the degree of arthritis of the temporo-mandibular joint for this population is less frequent than in the Maritime Archaic peoples. Considering the excessive use and strain placed on this joint among the Thule, he concluded that genetically they may have had a stronger and more stable structure here, able to absorb the stress with less degeneration.

Evidence for degenerative joint disease in the rest of the skeleton was frequent and was equally present in males and females. There was, however, a slightly higher frequency on the right side than the left, indicating probable right handedness of this population (Way 1990).

Among the pathological conditions present, Way also noted an advanced case of osteomyelitis, the result of infection following a severe fracture of the left humerus in an adult female. With the severity of the infection, it is more than likely

that the individual was not well and may, indeed, have been unable to carry out many of the day-to-day activities normally expected within the group. Dettwyler (1991:375) points out that "...we are not justified in drawing conclusions either about the quality of life for disabled individuals in the past or about the motives or attitudes of the rest of the community [based solely on]... skeletal evidence of physical impairment." Yet this Thule woman was evidently not abandoned to her fate, but remained with the group, possibly cared for until her eventual death and burial.

EUROPEAN CHRISTIAN

BURIAL PATTERNS: The European Christian style of burial was practiced by the last major influx of migrants into Newfoundland and Labrador, beginning with the Basques in the sixteenth century A.D. Distinguishing characteristics of Christian interment normally included single, primary in-the-ground burials, body supine, oriented east-west with head to the west, arms at the sides or crossed on the breast or hip area, and with a general lack of utilitarian or personal grave goods. However, decorative objects, *e.g.* jewelry, might occasionally be present. Bodies were usually encased in a coffin although, in some examples of European burials from the province, evidence suggests that bodies were sometimes wrapped only in a shroud and placed directly in the ground. Graves were usually marked with a headstone, although through time these often disappeared. Wooden crosses or head markers often disintegrated, or the stones were taken by later people and used elsewhere.

The only major variation on this European pattern of burials is found in the earliest example of a Christian cemetery in the province, the Basque burials from Red Bay, Labrador. Located in the Strait of Belle Isle directly across from the tip of the Great Northern Peninsula, this site was utilized extensively by Basque whalers between about A.D. 1540 and 1580 (Tuck 1985; Tuck and Grenier 1989). The cemetery, excavated in 1983-84, held the remains of at least 125 individuals in 57 burial features. Some of the features were marked by large rocks placed along the long axis of the grave (Kennedy 1989:100). Although many of the features contained a single individual, many others contained multiple primary interments ranging from two to eleven individuals (Kennedy 1989; Tuck and Grenier 1989). One pit contained the remains of twelve to thirteen individuals, haphazardly arranged and overlying each other. In another area, twelve individuals had been laid out on the ground, possibly on the floor of a crew house, and had never been buried (Tuck and Grenier 1989:60). Normally, when a single grave is used to accommodate multiple bodies, the implication is that the death of those individuals occurred at or near the same time. Two factors may have led to this situation at Red Bay. In the first instance, misadventure in whaling accidents may have led to multiple death by drowning. In the second, death, possibly by starvation when

whalers were forced to "winter over" with sparse supplies, may have led to rapid burial with little care by returning whalers in the spring (Tuck and Grenier 1989).

A second difference, found at both the Red Bay cemetery and the remains from a military cemetery from the Southside Hills in St. John's (Jerkic, unpublished data), concerns the presence of only adult males in each of these sites. With the occupations involved, *i.e.*, whaling and the military, this is not surprising. However, a "one sex" cemetery stands out as a variation in burial patterns found only among the Europeans.

Finally, although European Christian burial is usually associated with designated cemetery areas either near a church or within the boundaries of a community, isolated historic European burials have occasionally been encountered. An example of this occurred at Foxtrap, Conception Bay. The fragmentary skeletal remains of an adult female and child, buried in a coffin, may represent an isolated burial, perhaps on family land before churches or cemeteries were available (Jerkic 1986).

SKELETAL BIOLOGY: Skeletal remains recovered from historic European Christian burials represent a varied sample covering approximately 350 years. Each provides some unique information concerning the different immigrant groups which have exploited or settled in the province.

Red Bay: The skeletons excavated from the sixteenth century Basque cemetery on Saddle Island in Red Bay, Labrador, offer information from a European group engaged in a specific activity, whaling. Although 125 individual skeletons were uncovered at the cemetery there, the acidic soil had resulted in considerable deterioration of the bones. Most were so fragile that they could only be studied while still in the ground, and the *in situ* information which was gathered was limited. Less than 25% of the skeletons were removed from the ground and even on these preservation was poor and has precluded analysis of much beyond basic information.

As expected of a whaling endeavour, all the individuals were male. Age ranged from approximately twelve years to perhaps 50 years or older, although most were in early to middle adulthood. (Kennedy 1989:100-101). They were short in stature but ruggedly built as assessed in terms of areas of muscle attachment, reflecting the rigorous activities involved in rowing, harpooning, flensing, and boiling down the blubber from the whales. Aside from the interpretation revolving around multiple interments in single graves, there is no evidence for cause of death (Tuck and Grenier 1989).

In spite of the poor condition of this material, further information has been retrieved. Kennedy (1989) used samples of bone from these skeletons to extract carbon and nitrogen isotopes which can reflect the diets of the individuals in the months and years prior to death. As a living tissue, bone is continually being remodelled, with new bone tissue being laid down. The cancellous bone, honey-combed in appearance, in the interior of bones is remodelled more quickly than the thicker cortical (covering) bones. The results of her analysis indicated that, in the

time prior to death, these whalers, as might be expected in their location and occupation, were relying heavily on marine protein for their diet, including fish, sea mammals and sea birds. However, it is interesting to note that the isotope frequency from samples with more cortical bone, which is remodelled more slowly, indicates that the diet prior to coming to Red Bay, *i.e.*, in Spain, was less reliant on marine protein (Kennedy 1989:153).

L'Anse au Loup: The remains of a single individual were recovered eroding from a bank in L'Anse au Loup, Labrador, in 1987. An historic burial, with much of the coffin and clothing still intact, the skeleton and associated cultural remains presented some unique information (Mathias and Jerkic in press).

The skeletal remains were, perhaps surprisingly, those of a black male, approximately 22 years of age. Stature was calculated at 163.06 cm., relatively short. Although some of the skeletal elements were in poor condition, it appeared that the left forearm had been lost prior to death, which could possibly have been a cause of death.

The clothing had been placed in the coffin *on top* of the individual, rather than on the body. Reasons for this unusual situation could not be determined. The clothing proved to be that of a seaman. Analysis of the clothing style made it possible to date the burial fairly accurately to the early nineteenth century. From the combined data of skeletal and clothing analysis, evidence points to the death, perhaps by accident, and subsequent burial of a young black seaman along the Strait of Belle Isle in the early 1800s.

Deadman's Bay, Bonavista Bay; St. Paul's Church, Harbour Grace, Conception Bay: The salvage recovery from these two cemeteries are examples of situations in which memory of the existence of the burials by present-day inhabitants of the community has been lost. In both instances, discovery of skeletons was accidental in the course of construction activities. In Harbour Grace, the headstones in the church cemetery in that area were no longer present and these burials, possibly dating from the late eighteenth or early nineteenth century, had been forgotten. In Deadman's Bay, the burials may date from the mid to late nineteenth century. The community had been abandoned for a period in the early twentieth century and the small cemetery forgotten (Jerkic and Pastore 1993).

Analysis of European skeletons has begun to provide added evidence for the diversity of people, which is not always documented in the historical records, from Spanish Basque whalers, through seamen of varying backgrounds, to the settlers in coastal communities. Further skeletal analysis from this material may add to our knowledge of European health and demography in Newfoundland and Labrador.

PRESENT AND FUTURE RESEARCH

Technology involved in various areas of scientific analysis has become increasingly complex within the past twenty-five years. For osteological investiga-

tion, this has provided a number of different dimensions which may continue to add to our knowledge of the people in prehistoric and historic times in this province.

Depending upon the condition of the bone tissue, it is now sometimes possible to retrieve fragmentary DNA, mitochondrial and nuclear, from individual skeletons. This material can then be analysed and compared with modern human DNA or with other samples contemporary with the skeletal population. A small number of bone samples was taken from the Maritime Archaic skeletons by Johan Jelsma from the University of Groningen, Holland, to assess if DNA has been preserved in the Port au Choix material. These samples were processed through the laboratory of Robert Hedges, University of Oxford, and it was determined that mitochondrial, and possibly even some nuclear, DNA was preserved and analyzable (Hedges and Jelsma pers. comm.). Initial results from the sample confirm that the Maritime Archaic peoples are genetically related to the main Native groups found in the New World. Further bone samples have now been taken to determine if it is possible to identify family or clan groupings on the basis of genetic material.

Similarly, bone samples have been taken from two Beothuk skeletons to assess if usable DNA is present. If so, this may be the first step in trying to determine, genetically, the origin and relationship of the Beothuk to earlier as well as contemporary Native American groups.

Finally, proposed histological and parasitological analysis of mummified tissue from the Burnt Island skeleton, may help to determine the state of health of the Beothuks as their population dwindled in the eighteenth century.

The continued potential for gaining relevant information from burials and skeletal analysis is evident. In the next twenty-five years, it is hoped that many facets of the lives of the peoples who have inhabited this province for 9000 years may be investigated through ongoing research in these areas.

Summary of Burial Patterns and Skeletal Groups
in Newfoundland and Labrador.

	Maritime Archaic	Palaeo- eskimo	Beothuk	Thule Inuit	European/ Christian
Burial style in ground on ground caves cairns	XX	X XX	 XX	 XX	XX
Body Condition Primary Secondary	XX X	X? X?	XX X	XX 	XX
Body Position Extended Flexed Other	X XX	X? X?	X X X	XX 	XX
# of Bodies Single Multiple	X X	X? X	X X	XX X	XX X
Grave goods Present Absent	XX	XX some miniatures	XX some miniatures	XX	X seldom XX
Ethnic group Indian Inuit European/African	X	 X?	X	 X	 X

XX - predominant

X - present occasionally

References

- Anderson, J. (1976), "The Human Skeletons." In *Ancient People of Port au Choix*, J.A. Tuck. St. John's: Institute of Social and Economic Research, Memorial University of Newfoundland.
- Barbian, L.T. and A.L. Magennis (1994), "Variability in Late Archaic Human Burials at Turner Farm, Maine." *Northeast Anthropology* 47:1-19.
- Bourque, B.J. (1976), "The Turner Farm Site: a Preliminary Report." *Man in the Northeast* 11:21-30.
- Brown, S.C. (1988), "Archaeological Investigations at Crow Head Cave and the Gargamelle Rockshelter in the Port au Choix National Historic Park, Newfoundland." Report for Parks Canada, Atlantic Region, Halifax.
- Detwyler, D.A. (1991), "Can Paleopathology Provide Evidence for 'Compassion'?" *American Journal of Physical Anthropology* 84:375-384
- Evans, H. (1991), "Stress Indicators of an Archaic Indian Population: An Examination of Growth Recovery Lines in Skeletal Material from Port au Choix, Newfoundland." Honour's thesis, Department of Anthropology, Memorial University of Newfoundland. St. John's.
- Harp, E. and D.R. Hughes (1968), "Five Prehistoric Burials from Port au Choix." *Polar Notes* 8:1-47.
- Howley, J.P. (1915), *The Beothucks or Red Indians: The Aboriginal Inhabitants of Newfoundland*. Cambridge: Cambridge University Press.
- Jerkic, S. (1986), Unpublished report to the RNC on human remains from Foxtrap, Conception Bay, Newfoundland.
- _____ and R.T. Pastore (1993), "Four Graves from Deadman's Bay, Bonavista Bay." Unpublished report on file, Historic Resources, Government of Newfoundland and Labrador. St. John's.
- Kennedy, B.V. (1981), *Marriage Patterns in an Archaic Population: A Study of Skeletal Remains from Port au Choix, Newfoundland*, Mercury Series No. 104. Ottawa: National Museums of Canada.
- _____ (1987), "A Possible Case of Histiocytosis x in an Archaic Indian from Port au Choix, Newfoundland." *Canadian Journal of Archaeology* 11: 109-118.
- _____ (1989), "Variation in ¹³C of Post-Medieval Europeans." Ph.D. dissertation, University of Calgary.
- Marshall, K. (1990), "Patterns of Activity in a Maritime Archaic Population in Newfoundland derived from Observations of Activity-Induced Degenerative Joint Disease." Honour's thesis, Department of Anthropology, Memorial University of Newfoundland. St. John's.
- Mathias, C., and S.Jerkic (in press), "Investigating 'wh': A Nineteenth Century Burial from L'Anse au Loup, Labrador." *Canadian Journal of Archaeology*.
- McGhee, R. (1976), *The Burial at L'Anse-Amour*. Archaeological Survey of Canada. Ottawa: National Museum of Man.
- _____ and J. A. Tuck (1975), *An Archaic Sequence from the Strait of Belle Isle, Labrador*. Mercury Series No. 34. Ottawa: National Museum of Man.

- Melbye, F.J. and T. Garisto (1993), "The Skeletal Biology of the Dorset Palaeo-Eskimo: A Contribution from Northern Newfoundland." Paper presented at the annual meeting of the Canadian Association for Physical Anthropology. St. John's.
- Merbs, C.F. (1983), *Patterns of Activity-Induced Pathology in a Canadian Inuit Population*. Mercury Series Paper No. 119. Ottawa: National Museums of Canada.
- Pastore, R.T. (1992), *Shanawdithit's People: the Archaeology of the Beothuks*. St. John's: Atlantic Archaeology Ltd.
- Pfeiffer, S. (1977), *The Skeletal Biology of Archaic Populations of the Great Lakes Region*. Mercury Series Paper No. 64. Ottawa: National Museum of Man.
- Reader, D. (1990), "An Examination of Molar Attrition, Mandibular Torus, and Temporomandibular Joint Arthritis: Their Relations and Cultural and Genetic Affiliations in a Maritime Archaic and a Thule Skeletal Group." Honour's thesis, Department of Anthropology, Memorial University of Newfoundland. St. John's.
- Robinson, B.S. (1992), "Early and Middle Archaic Period Occupation in the Gulf of Maine Region: Mortuary and Technological Patterning." In *Early Holocene Occupations in Northern New England*. Occasional Publications in Maine Archaeology 9. Augusta, Maine.
- Schlederman, P. (1972), "The Thule Tradition in Northern Labrador." M.A. thesis, Memorial University of Newfoundland. St. John's.
- Skinner, M.A., J. Barkley, and R.L. Carlson (1989), "Cranial Asymmetry and Muscular Torticollis in Prehistoric Northwest Coast Natives from British Columbia (Canada)." *Journal of Palaeopathology* 3(1):19-34.
- Tuck, J.A. (1976), *Ancient People of Port au Choix*. St. John's: Institute of Social and Economic Research, Memorial University of Newfoundland.
- _____. (1982), "Prehistoric Archaeology in Atlantic Canada Since 1975." *Canadian Journal of Archaeology*. 6:201-218.
- _____. (1985), "Unearthing Red Bay's Whaling History." *National Geographic*. 168: 50-57.
- _____. and R. Grenier (1989), *Red Bay, Labrador: World Whaling Capital A.D.1550-1600*. St. John's: Atlantic Archaeology Ltd.
- _____. and R. McGhee (1976), "An Archaic Indian Burial Mound in Labrador." *Scientific American*. November: 122-129.
- Way, J.E. (1978), "An Osteological Analysis of a Late Thule/Early Historic Labrador Eskimo Population." Ph.D. dissertation, University of Toronto.
- Whitehead, R. (1987), "I Have Lived Here Since the World Began: Atlantic Coast Artistic Traditions." In *The Spirit Sings*. Calgary: McClelland and Stewart/Glenbow Museum.