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ARCH NOTES

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Newsletter of

The Ontario Archaeological Society (Inc.)

February 1973

University of
Western Ontario

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monthly meeting

The next General Meeting will be held at 8:00 p.m., Wednesday, February 21 in the Archaeology Laboratory, Room 561A, Sidney Smith Hall, 100 St. George St., University of Toronto, Toronto 181, Ontario.

Our guest speaker will be Miss Geraldine H. Shepherd, member of the O.S.A. for a number of years, and part of the Summer Salvage Project crew. Miss Shepherd's topic will be JOURNEY THROUGH TIME: A PROFILE OF PERSIA.

oas executive 1973

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- PRESIDENT: Dr. Howard Savage,
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- PAST PRESIDENT (1971): Dr. James V. Wright,
Archaeological Survey of Canada,
National Museum of Man,
Ottawa, Ontario.

ATTENTION: CERTIFICATE COURSE HAS OPENINGS AVAILABLE.

A beginning-level course in Pottery Processing and Analysis for O.A.S. Members will commence at 8 p.m. next Monday night, February 19th, 1973. It will be held in the Archaeology Laboratory, room 561A, Sidney Smith Hall. The instructor will be Mr. Peter Ramsden. Each course session will last 2 hours, and the entire course 8 weeks. Satisfactory attendance and participation in a minimum of 6 sessions will result in a certificate being awarded. The course is aimed primarily at all phases of pottery work, but other artifacts may be included. There is no charge to O.A.S. members, but serious participation is expected. Possession of this course certificate may be a prerequisite to future more advanced courses.

president's message

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The activities of the Ontario Archaeological Society in 1973 are already in the planning stage, and if put into action, will give our Society another memorable year. It will not be easy to equal the sum of its activities in 1972.

Excavation plans for 1973 centre around a proposal by our Salvage Project Committee to the Archaeological Survey of Canada, of the National Museums of Canada, to continue exploration of the Draper site in order to find answers to significant questions raised during the 1972 field work there, and to excavate a large, late prehistoric site, not far distant from the Draper site both geographically and chronologically. Destruction of these sites in Pickering Township will follow construction of the airport and adjacent community there; further steps towards expropriation of the land involved were announced by The Honourable Jean Marchand, of the Ministry of Transport, Ottawa, on 30 January 1973.

Publication plans for "Ontario Archaeology" include, in addition to Volume 17, issued at our January meeting, the release of Volumes 18 and 19 as 1972 issues, and at least Volume 20 as a 1973 publication, all during this calendar year. Favourable comments concerning the content and format of Volume 17 continue to be received.

At least nine issues of Arch Notes are planned for 1973, in an enlarged form with added sketches and drawings.

Other O.A.S. activities may, and hopefully will develop during the coming months. Your executive is always most ready to hear of and discuss projects, which will aid and advance archaeological knowledge in Ontario.

Howard Savage, President,
Ontario Archaeological Society.

vp's message

In any vigorous, developing Society such as ours, an election is a healthy event. It is not an indication of conflict; nor is it a popularity contest. It is a reflexion of the concern of the members for the way in which the Society functions and grows. It is not so important who "wins" the election; it is important that we continue to have elections. I heartily thank all those who cast a ballot for me in our recent vice-presidential vote, and promise to all members that I will work hard for the interests of the O.A.S. Victor Konrad will carry on as Executive Officer, contributing his considerable energies to our common goals. Both as friends and as archaeologists we will continue with the rest of the Executive, to pool our efforts on behalf of all O.A.S. members.

Donald MacLeod, Vice President.

papers & reports

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THE ARCHAIC IN NEWFOUNDLAND AND LABRADOR

Don't be misled by the ambitious title of this brief outline. This is not one subject, but many. The term "Archaic" is an ill-defined one, and the areas we now call Newfoundland and Labrador are complex in prehistory: they are related, but still different places; they are different things at different times. In both places there is an ecological pattern that creates a setting for two basic themes: coastal and interior. We think of these as cultures, adapted to different environments -- but this is not necessarily so. In archaeology, we can talk about environments with confidence, but not about cultures. Perhaps what we need is a more honest word than "cultures".

What do we mean by the words "Culture" and "Archaic"?

When most archaeologists talk of a prehistoric culture, they are actually talking about the fragments of a technology. Cultures are living things done by living people. Technological fragments are dead. The intuitive, imaginative jump between the two is immense. Inferences can be made about the culture of a dead people from the fragments, but only with great understanding of living human behavior. The older the fragments, the less the understanding. Therefore, we are discussing the fragments of Archaic technology in Newfoundland and Labrador. At present, we can only observe certain trends among the fragments that speak for past cultures.

What is the Archaic? It has been defined as a time period; a technology; an ecological adaptation; a culture; an artifact assemblage; an area. It is a little of all of these. In north-eastern North America, it runs from about 5000 B.C. to 500 B.C.; starts when the Palaeo tradition gives way to a spurt of technical refinement and variability; ends when pottery is introduced; leaves in the ground crude choppers, big scrapers, notched and stemmed points, a fluid flake tool assemblage, ground stone and red ochre; implies an evolving adaptation to a changing environment, increase in population and elaboration of religion; exists everywhere except in the high arctic.

In Newfoundland, we see most of these things, but not all. By most definitions, the Archaic in Newfoundland runs from about 3000 B.C. to 1840 A.D., with a mysterious gap between 100 B.C. and 700 A.D.. But in the interior plateau of Labrador, we only have a whiff of the Archaic, from about 1000 A.D. until early historic times. Here, there is no red ochre, and little enough ground stone to hold in one hand. The late dates are fantastically recent, by accepted standards. There are no prehistoric predecessors. There is no pottery to finish it off. Two basic facts emerge: 1) we have a great scarcity of information, especially in interior Labrador; 2) the term "Archaic" is not adequate, alone; it needs refinement. The lack of information can be corrected by further research. But re-adjusting our understanding of Archaic requires both data and reflection.

It would help to review the accepted, very general structure of the northeastern Archaic as we see it now in Ontario. We recognise two basic manifestations oriented to ecological zones: Shield and Laurentian. Shield Archaic is characterized by a basic chipped stone industry, with a large proportion of crude, general purpose tools. There are many large scrapers, projectile points, many utilized flakes and an inferred heavy dependence on bone implements. In some areas, extensive use was made of native copper. Ground stone is almost absent. Sites are small and limited to the few, relatively hospitable living locations along the thousands of waterways which criss-cross the endless boreal forest. Technology seems to be "just good enough and no better". Tools are made to do the job but not to be ornamental.

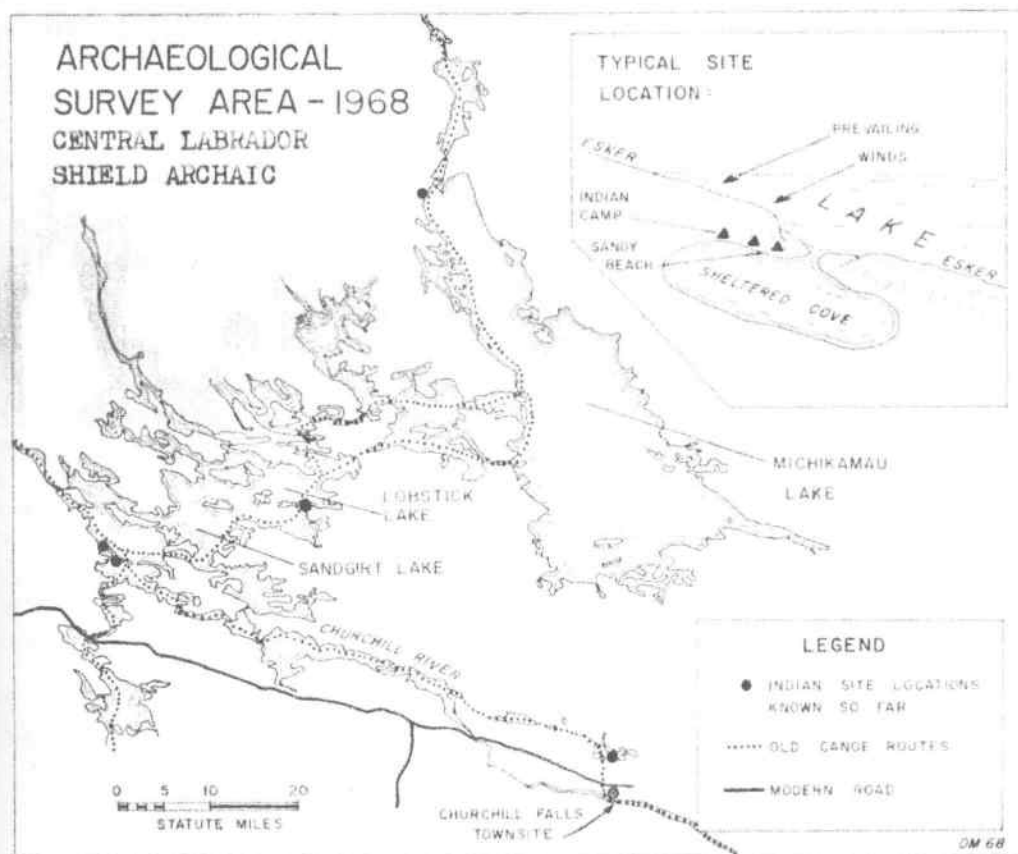
Laurentian on the other hand, distributed almost entirely in the hardwood forest areas south of the Shield, represents the handiwork of a larger population living in an easier environment. In addition to the same general artifact types found in Shield, the Laurentian has a rich ground stone industry in which art and function are combined. Burial patterns are elaborate, involving much use of red ochre and large votive deposits of artifacts. The chipped stone industry comprises a large variety of definable types, especially beautifully fashioned stemmed and notched projectile points. The bone industry, where known, is likewise more elaborate than its Shield counterpart. Laurentian culture was oriented to the Great Lakes and St. Lawrence lowlands -- a far different environment from the harsh, infertile expanse of the Shield.

In very rough terms, the temporal sequence for the northeastern Archaic in Ontario could be summarized:

<u>TIME</u>	<u>NORTHERN ONTARIO</u>	<u>SOUTHERN ONTARIO</u>
Before 5000 B.C.	Palaeo: Clovis and Plano	Palaeo: Clovis and Plano
5000 B.C. - 500 B.C.	Shield Archaic	Laurentian Archaic
After 500 B.C.	Laurel, northern Woodland cultures, leading to Algonkian	Southern Woodland cultures, leading to Iroquois

In Newfoundland and Labrador, a similar rough breakdown in the Archaic can be made. These are at present called Shield -- in the interior of Labrador -- and Maritime, around the coast of Newfoundland island and along the coast of Labrador. The Shield material is known only from a few sites in the upper Churchill River drainage basin, and it looks much like Shield technology from northern Ontario and Quebec. Large, roughly flaked bifaces or "hand-axes" dominate the assemblage. These are likely general cutting-scraping tools.

Numerous utilised flakes are found, some in the form of spokeshave or shaft-smoother, some modified into a side-scraping tool with a graving tip resembling a burin. Large, crude, chopping and scraping



tools are fashioned by the removal of a few flakes from a core or boulder flake. A few small blades or "linear flakes" have been found. An example is known of a beaming tool (hide scraper) made from the cannon bone of a caribou. The technology is simple and no-nonsense. Sites are few and far between. Only summer camps have been located, consistently on sandbars composed of esker outwash, usually at a breach in the esker where there is some protection from the wind and a good fishing spot.

Maritime Archaic is quite a different thing. Its name can be easiest derived from the distribution of the artifact assemblage: along the coast, or up large, navigable rivers like the St. Lawrence. The assemblage is dominated by an exquisite ground stone industry very similar to the Laurentian technology of Ontario. Gouges, adzes, axes and beautifully crafted, ground slate points of all sizes are always present. The percentage of "bayonets" (long, narrow ground slate points) drops rapidly as this technology is traced up-country, away from the coast, suggesting some functional

relationship with fishing or sea-mammal hunting. An elaborate assemblage of side-notched and stemmed chipped points and bifacial knives is also present. Often, exotic materials appear -- such as the smoky, translucent "Rama chalcedony" -- indicating a widespread trade network.

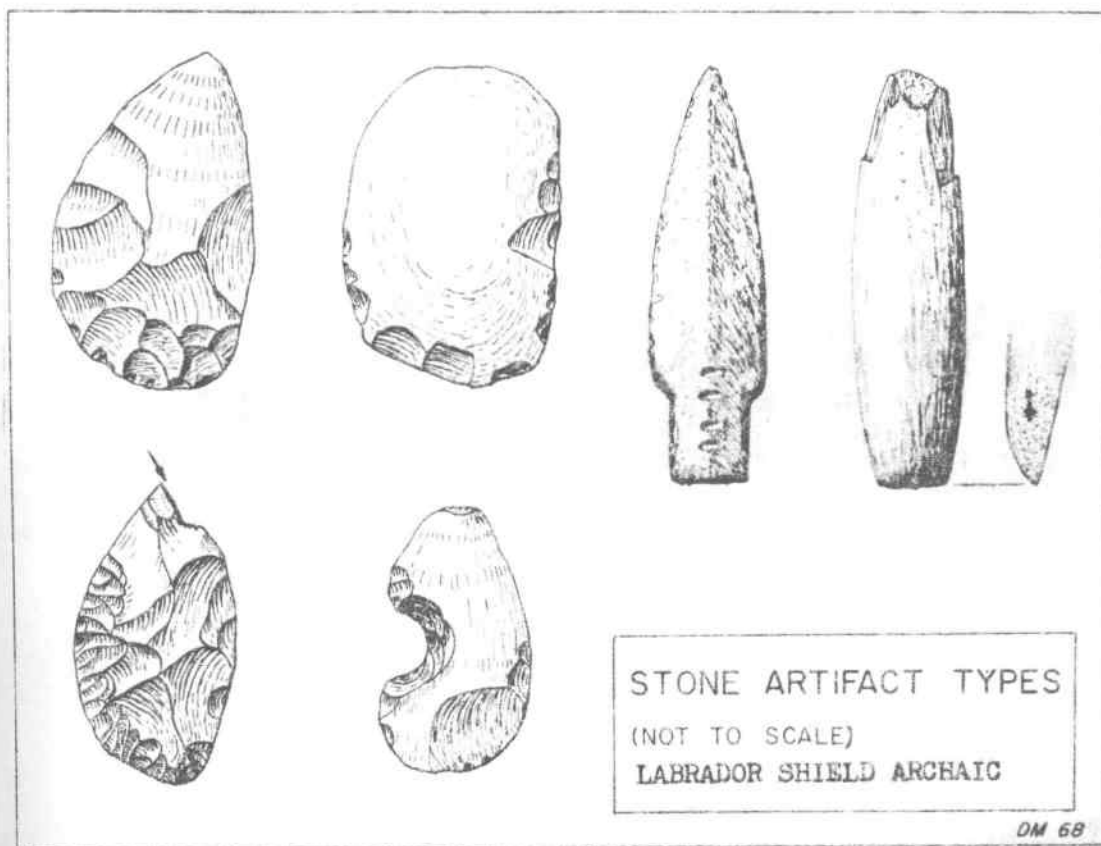
The Maritime Archaic is largely known from cemeteries, where rich artifact deposits are found in association with red ochre. These are known from the coast of Maine to at least halfway up the Labrador shore, and from eastern Newfoundland to the Upper St. Lawrence. Bone is seldom found, but in one site -- the Port-aux-Choix cemetery on the northwest tip of Newfoundland -- the alkaline soil preserved skeletons and organic artifacts, even birchbark containers. An amazing assortment of bone, ivory and antler implements was represented, mostly oriented to sea-mammal hunting, with caribou of secondary importance. Elaborate art, both abstract decoration and naturalistic animal representation, seems to be associated with totemism and burial ceremonialism. At a similar site near Twillingate, on the northeast coast, evidence of fires in the graves was provided by ample charcoal samples which yielded a cluster of dates between 1650 B.C. and 1250 B.C. Port-aux-Choix gave one date of 2430 B.C. Some suggestion of relations with early arctic cultures arises from great similarities in harpoon types, and the existence of a few small, asymmetric knives in Maritime Archaic collections. The Archaic technology seems to have been wholly replaced by the Dorset Eskimo by about 100 B.C., on all coastal sites. However, there is still a chance that some Archaic people survived in the interior of Newfoundland, and that the Beothuk were their lineal descendants.

The chronology of the Newfoundland-Labrador Archaic could be summarized roughly as follows:

<u>TIME</u>	<u>LABRADOR (INTERIOR PLATEAU)</u>	<u>ISLAND OF NEWFOUNDLAND AND COAST OF LABRADOR</u>
Before 4000 B.C.	still covered by glacier	???? early Archaic ????
3000 B.C. - 100 B.C.	?????	Maritime Archaic
100 B.C. - 700 A.D.	?????	Dorset Eskimo
After 700 A.D.	Shield Archaic, probably Algonkian culture leading to Montagnais-Maskapi	Beothuk: a late form of Archaic, Algonkian speaking, extinct about 1840 A.D.

These sequences are grossly over-simplified, but serve to point out the great difference in time scale as we explore the "far northeast", as compared with better-known areas like Ontario and the northern United States.

Newfoundland and the narrow band of Labrador coast can be considered as a unit. The area has been, at different times, the northern, southern and eastern terminus of three major technological or cultural traditions. Until about 100 B.C., the northern limit of Maritime Archaic was here; then, for a few centuries, the region was the southern limit of the arctic Dorset tradition. What happened to the Archaic during this time, from about 100 B.C. to 700 A.D., is not known, but a few carbon dates in this period seem to relate neither to Eskimo nor to Maritime Archaic. Finally, until the destruction of the unfortunate Beothuk by European colonists, Newfoundland was the eastern extent of Algonkian culture. When the Beothuk appear, their technology is still essentially Archaic: no pottery, no plant domestication; elaborate burial patterns and profuse use of ochre; diverse lithic tool kit; great variability in response to conditions of season and locale. From what may be inferred of economy and society in the Archaic generally, the Beothuk lived much as their ancestors in 3000 B.C. In this sense, we can say that the Archaic in Newfoundland covers the span between 3000 B.C. and 1840 A.D.



In the interior plateau of Labrador, where the remnants of the continental glacier lasted until about 4000 B.C., no evidence exists for any technology preceding "Shield Archaic". In fact,

this loosely defined "culture" is the only manifestation known in the area. Probably people arrived here quite late. The only carbon dates are 1010 A.D. and 960 A.D. (Sandgirt Lake site) so far; this is late Shield Archaic. In modified form, this was doubtless the technology of the historic Montagnais and Naskapi, until European trade, beginning in the 1600's, changed their techno-tradition radically. It seems reasonable, then, that the people who brought the last gasp of Shield Archaic technology into the vast, inhospitable uplands of Labrador were Algonkians. There does not seem to have been time for anyone else to do it.

As always, there is far more still unknown than is understood. We should ask about the origins of these traditions, and the relationships between them. Shield and Maritime Archaic seem to be derived from two different environments by two different cultures. But in both, assemblages do include examples of the technology of the other. Contact was being made, across time and space. A serious question arises as to whether technological traditions represent cultures or merely regional or seasonal functional specialties. In our society, we use cars in the city and canoes when travelling in the bush, but this does not make us into two cultures. Nor is the essence of our culture corrupted because some people still living used oil lamps in 1903 and now use electric lights. Contrary to the mistake commonly made by so many archaeologists, technologies are not cultures.

All human cultures have the capacity to adopt or create quite diverse technologies for specific purposes. Likewise, technologies cross cultural boundaries (the use of transistor radios does not make us all Japanese). The Beothuk of Newfoundland, probably the last people to live an "Archaic" style of life, were distinguished by the very variability of their material culture, depending on whether they lived on the coast or the interior, or whether it was summer or winter. An exhaustive understanding of ecological and social factors in living peoples can help us appreciate the behavior of past peoples. But for the time being, the Archaic of Newfoundland and Labrador can be best and most honestly known as the fragments of a technology.

Donald MacLeod, January 1, 1973.

The foregoing was abstracted from a talk given to the General Meeting of the Ontario Archaeological Society on May 17, 1972.

METALS IN EARLY AMERICA

HISTORY, TECHNOLOGY, ARCHAEOLOGY

The Council for Northeast Historical Archaeology.

Meeting Announcement and Call for Papers.

Spring Symposium, Bear Mountain, New York, April 14, 1973.

THE ARCHAEOLOGY OF METALS IN EARLY AMERICA

This special symposium on the history, archaeology, and preservation

of early metal will be held at Bear Mountain, N.Y., on Saturday, April 14, 1973. Those wishing to attend, or to present papers, should write to

EDWARD F. HEITE,
21 South Main St.,
Camden, Delaware, 19934,
U.S.A.

The Council for Northeast Historical Archaeology is a loosely-organized conference of archaeologists, historians, and preservationists in the northeastern United States and Eastern Canada. There are no dues.

SALVAGE PROJECT - 1972

An interim report was submitted to the Archaeological Survey of Canada in January, 1973. It contained a progress report on analysis of the material from all of the four sites salvaged during the 1972 field season. Although the MacLeod Site analysis has almost been completed, the analysis of the last three sites to undergo salvage operations (Boys, Carlton and Draper), is still going on. Thanks are due to Marti Latta, Peter Ramsden, "Paddy" Reid and the many other O.A.S. members who have helped with the analysis of the material from these sites.

It was the feeling of the Salvage Project Committee that short reports on each of the sites should appear in ARCH NOTES prior to any comprehensive publication on our 1972 salvage activities. The short reports will be prepared after the analysis has been completed, and the final report compiled. They should appear in your April 1973 issue of ARCH NOTES.

A proposal for the continued salvage of the Draper Site and the salvage of the White Site has been submitted to the Archaeological Survey of Canada for consideration. Both Draper and White are within the designated area of the New Toronto Airport, and face certain destruction by runway construction. Although salvage operations have commenced on the Draper Site, a great deal remains to be done on this large village site. The White site has never been subjected to scientific excavation. Preliminary tests suggest that we are dealing with a small and relatively well preserved Iroquois village site.

Any developments on our application to A.S.C. will be reported in ARCH NOTES.

Victor Konrad,
Project Co-ordinator.

THE RISEBROUGH SITE

The Risebrough site was located during the Archaeological

Inventory of Metropolitan Toronto in 1971. The site will be destroyed in the near future and requires immediate salvage.

A two week salvage operation is being planned for early May of 1973. If you have had excavation experience and would like to work on the project, please write to:

Mr. V.A. Konrad,
Department of Geography,
York University,
4700 Keele St.,
Downsview, Ontario.
M3J 1P3

Do not forget to include your name, address and telephone number. A salary of approximately \$80. per week will be paid.

THE FOSSIL POLLEN RECORD OF EUROPEAN AND INDIAN MAN IN SOUTHERN ONTARIO

M. Boyko

The unique annually laminated sediments of Crawford Lake, Halton County, provide a built-in time control for the dating of regional vegetation changes as recorded in the pollen record. The lake lies 1 km. west from the edge of the Niagara Escarpment in a conservation area managed by the Halton Region Conservation Authorities.

The sediments were collected from the lake bottom by a new sampling technique termed the 'frigid finger' which freezes the sediments in situ. Pollen analysis of the past 1000 years revealed two episodes of human disturbance. The more recent disturbance attaining significance from the interval 1846-1851 A.D. is attributed to European settlement. In the pollen record, European activities are recognized by a radical drop in tree pollen and a corresponding increase in herb pollen characterized by cereals, native (ragweed) and European-introduced weeds (dock, ribwort, plantain, sweet clover, medick, and blue weed). Selective lumbering and land clearance accounted for the marked drop in pine, hemlock, oak, and maple. Patent records for an area about 1500 sq. mi. surrounding Crawford Lake illustrated that, although settlement in this area began at the end of the 18th. century, its rate was not important until the 1820's and afterwards. By 1850, 80% of this area had been occupied but only 25-30% had been cultivated.

The older disturbance represents Indian settlement in the vicinity of Crawford Lake. In the pollen record, it is recognized by a lower herb zone characterized by grasses, maize, and weeds such as common purslane, ferns, mugwort, and composites. Corn pollen is not common in lake sediments. However, large concentrations of maize pollen were found in the sediments of Crawford Lake using the scanning technique (Dr. Byrne). Fossil maize pollen is present for 320 years, 1290-1610 A.D., with the greatest concentration in the interval 1370-1480 A.D. (Dr. Byrne). Common purslane, a corn field weed, has its greatest concentration 1410-1480 A.D. (Dr. Byrne). To the present time, common purslane was believed to be a European introduction but its presence in pre-European sediments denies this belief. These dates correspond to the date of 1450 A.D. estimated for the Campbellville site about 8 km. west of Crawford Lake. Burnt corn cobs were found in the kitchen middens of this site. Furthermore, charcoal in the sediments increased below 1650 A.D.

The presence of Indian agriculture for at least 3 centuries, together with the assumption of a 20-year duration period per village, implies shifting agriculture. Shifting agriculture, in turn, implies forest clearance and tree percentages do drop a little during the Indian period (Dr. McAndrews).

The large size and weight of maize pollen prevents it from travelling far from its source. The implication is that the Campbellville site is too far to be the source for the fossil maize pollen found in the sediments of Crawford Lake and sites closer to the lake are believed to exist. Two potential village sites are the Howard property on the NW side of the lake and the moraine on the escarpment cuesta, about $\frac{1}{2}$ km. NE from the lake. An artifact was found near the moraine by Dr. J.H. McAndrews.

ACKNOWLEDGEMENTS

Dr. J.H. McAndrews (Associate Curator of Geology at ROM,
Assistant Professor in Department of Botany at University
of Toronto)

Dr. R. Byrne (Assistant Professor in Geography Department
at Erindale College, University of Toronto)

Royal Ontario Museum

Halton Region Conservation Authorities.

PROBLEMATIC SOIL FEATURES AT THE GLEN WILLIAMS SITE by R. V. Putt

The Glen Williams ossuary site is located on Lot 22, Concession 10, Esquesing Township, Halton County, Ontario. It is situated on a point of land which directly overlooks the Credit River valley, approximately 100 feet below. The burial complex consisted of two ossuaries and three peripheral graves. Excavation took place in 1968 and 1969, under the joint supervision of P. C. Hartney and Dr. Howard Savage. A full site report is in preparation.

During excavation, hundreds of vertical, cylindrical features were found in the surrounding soil. Recalling the post molds reported at Ossossane (Kidd 1953), they were excavated and recorded with great care (Fig. 1). However, further study has yielded good evidence that they are not man-made features, but natural phenomena. This preliminary report, summarized from a more detailed manuscript, was prompted by the interest generated by the unusual nature of these features and their occurrence at an archaeological site.

The deposits into which the burial pits were intrusive may be described as follows: The topmost layer under the plough zone was a sand horizon extending to an approximate depth of 50cm (20 in.). Below this was a dark reddish-brown horizon, approximately 10cm (4 in.) thick, of heavy, compact clay and gravel. This horizon undulated, dipping down at frequent intervals to form the tongues which are the subject of this report (Fig. 2). With an average length of one metre (3.3 ft.), they were variable in diameter (5cm to 30cm; 2 to 12 in.), with a tendency to taper toward the bottom. Root hairs were commonly observed in and around the tongues. The margins of some tongues were a deeper reddish-brown than the interior portions. In horizontal section, they appeared as dark, circular areas. More than 370 of these features were recorded in the 101 square metres excavated.

The tongues extended downward into a matrix of sandy gravel, the bottom layer of which appeared to become coarser and less sandy. Cross bedding was clearly evident in portions of this deposit. At a depth of approximately 140cm (4½ ft.) there was an abrupt transition to sand, also showing traces of bedding. Some tongues continued down into the sand in the form of a reddish stain, often increasing in diameter in the process. Gravel deposits are common in this part of the Credit River valley, which is a former glacial spillway.

Using a multiple hypothesis model, several possible interpretations were compared with the data for goodness of fit. If posts had been present and subsequently pulled out, the dark soil horizon might have slumped into the cavities, resulting in an approximation of the observed phenomena. However, at least four pieces of evidence militate against a post hole interpretation:

(i) The Glen Williams tongues exhibited no obvious pattern (Fig. 1); (ii) they were found underneath both ossuaries and at least two of the peripheral graves; (iii) trenching carried as far as 12m (40 ft.) from the centre of the large ossuary failed to find a limit to the features; (iv) similar features were found in a gravel pit ½ mile to the south of the site (Hambly 1970).

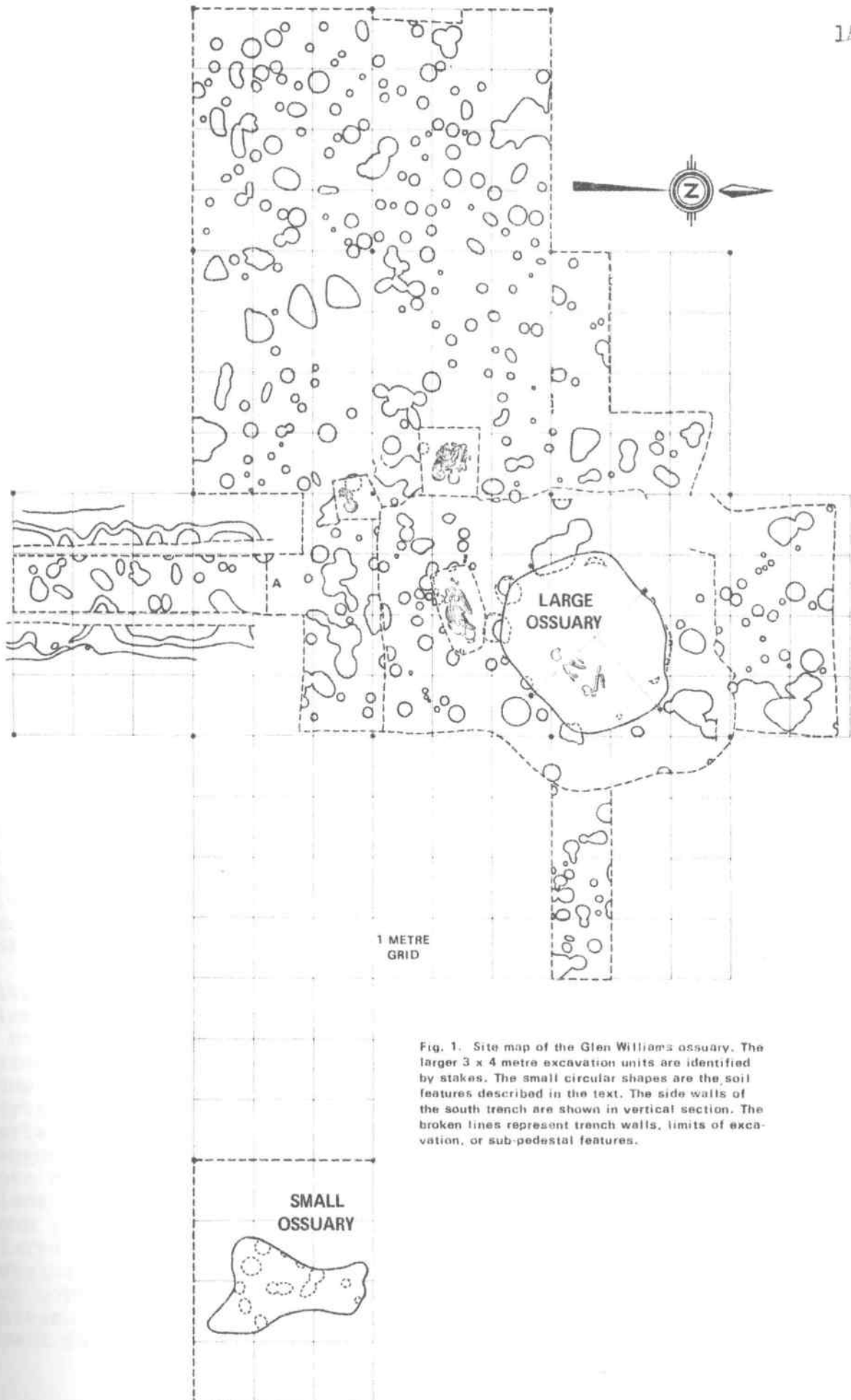


Fig. 1. Site map of the Glen Williams ossuary. The larger 3 x 4 metre excavation units are identified by stakes. The small circular shapes are the soil features described in the text. The side walls of the south trench are shown in vertical section. The broken lines represent trench walls, limits of excavation, or sub-pedestal features.

An analysis of the soil deposits in the vicinity of the bone pits was carried out by Sherry Hambly (1970). The overlying sand was interpreted as a wind-blown deposit. The dark reddish-brown layer was identified as a Bt horizon, or horizon of clay accumulation, with a concentration of free iron oxide (Fe_2O_3) producing the color. The clay tongues were felt to be the result of periglacial weathering; ice-wedge casts were suggested as a possibility. The underlying gravel was correctly described as glacial outwash; the observed bedding is characteristic of a water-laid deposit.

Fossil ice wedges are the result of the filling of former frost cracks with detritus from above (Johnsson 1959). They are wedge-shaped by definition, are linear in ground plan, and are typically several metres in length. The Glen Williams tongues differ: they are cylindrical or funnel-shaped, and are more or less circular in ground plan.

Involutions are another manifestation of periglacial action. They have been described (Sharp 1942:119) as "intensely deformed, involved, and haphazardly interpenetrating masses of silt and sand originally arranged in horizontal beds". The Glen Williams tongues appear to be quite different from involutions in terms of both morphology and composition.

The periglacial phenomena collectively known as patterned ground have been classified (Washburn 1956) into sorted and non-sorted circles, nets, polygons, steps and stripes. These surface features are apparently represented in stratigraphic sections as ice-wedge structures or involutions. Brief mention has already been made of both.

Yehle (1954) has described soil structures, called soil tongues by pedologists, which owe their genesis to a process of differential solution, but which resemble fossil ice wedge and frost crack fillings. Hence, they may be mistaken for the latter, especially in areas which may have been subject to former periglacial conditions. The deposits investigated by Yehle were located in a gravel pit in Wisconsin. They were described as follows:

Sandy gravel outwash material, rich in limestone and dolomite, located in a former glacial meltwater channel near the Wisconsin River. Above this, a cover of wind-deposited dune sand, 3 to 6 feet thick. Between the underlying outwash and the overlying sand, a 3 to 4 inch thick horizon of reddish-brown silt loam "pan", containing chert, limestone and dolomite pebbles. Vertical tongues, extending downward from the base of the "pan" horizon, penetrating 4 to 6 feet into the outwash gravel. The tongues were identical in texture and composition to the "pan", into which they merged. Circular in ground plan, with an average diameter between 1 and 2 feet, they resembled pipes, tapering down to the base, flaring out at the top (Fig. 3). Some also flared out at the bottom, appearing to have a bulbous base. The margins of some tongues were a deeper reddish-brown than the inner portions, showing a distinct accumulation of iron oxide. The outwash beds continued unbroken through some tongues, but were bowed downward within them.

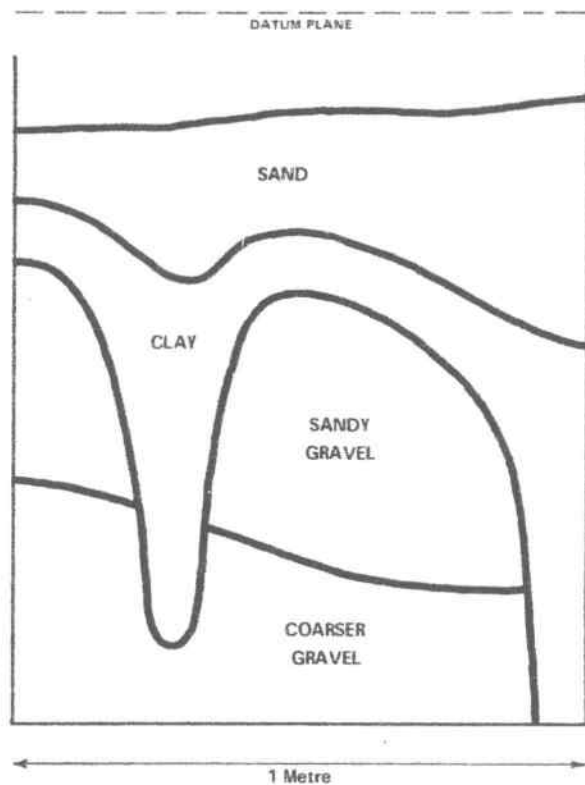


Fig. 2. Diagrammatic representation of representative strata and tongues at the Glen Williams site. This vertical section was recorded at point "A" in the south trench (See Fig. 1).

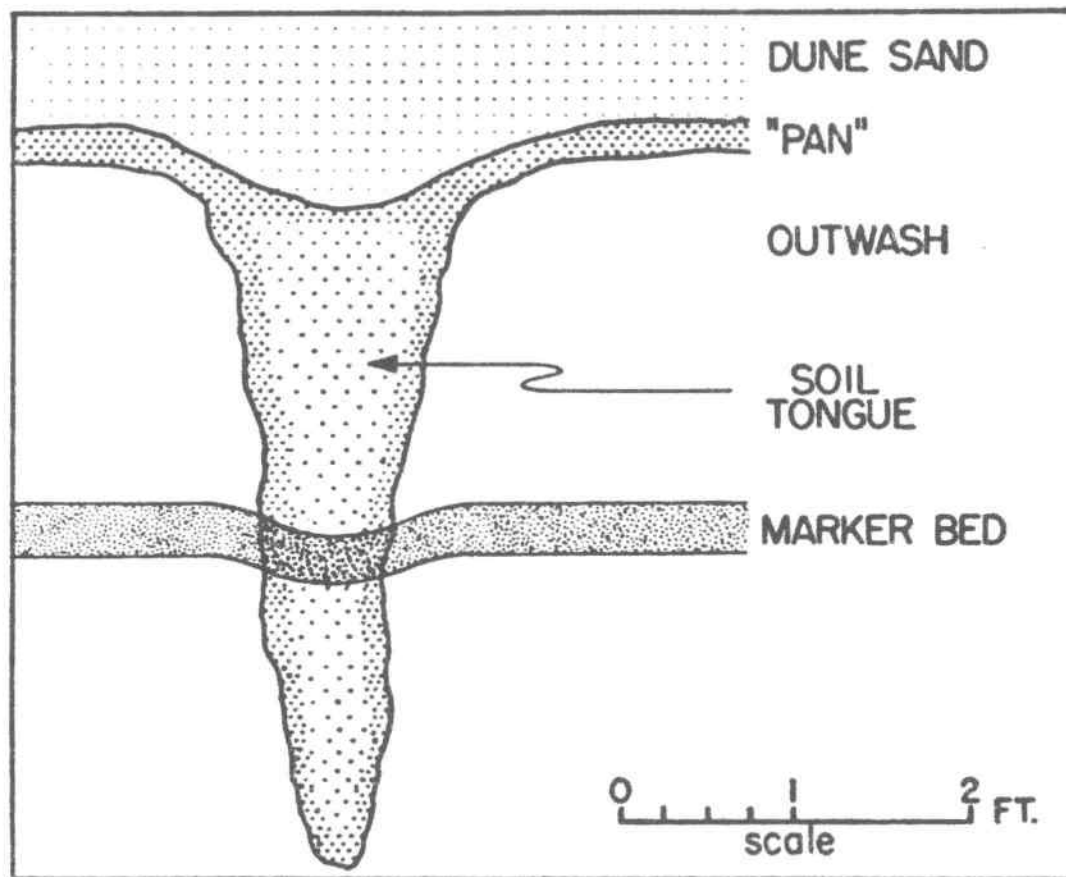


Fig. 3. Vertical section of soil tongue at the site in Wisconsin investigated by Yehle. Diagram adapted from Yehle (1954:535); enlarged to same scale as Fig. 2.

According to Yehle, soil tongues are formed through differential solution and deposition. These solution structures may develop as extensions of the normal irregularities marking B_3 subhorizons of pedalfer soils forming in calcareous, sandy gravel deposits. Favorable conditions include a level to gently rolling topography and an annual precipitation of at least 25 inches. Water which may bear organic acids and carbon dioxide percolates downward from the surface through soluble earth materials. Differential leaching may be initiated by slight surface irregularities; the tongues may be amplified through a natural channelling of percolating water into them. Yehle cites a loss of carbonates and a reduction of grain size in the tongue material as evidence of the importance of solution. Hence the soil tongues were formed by alteration of the outwash in situ and not by the filling of a crevasse with material from above.

The similarity of the above description to that of the Glen Williams deposits is striking. The hypothesis that the Glen Williams phenomena are soil tongues would seem, therefore, to be the one most reasonably supported by the data.

The Glen Williams site, then, offers no evidence that scaffoldings such as those described in the historical record were employed. The associated village site has not yet been located. If it is situated in similar deposits, a proliferation of soil tongues could seriously hamper the identification of settlement patterns. According to Prof. A. V. Jopling (Dept. of Geography, pers. comm.), these features are fairly common in southern Ontario. It may be pertinent, then, to suggest that similar features found at other archaeological sites be subjected to the most careful scrutiny before any attempt is made at interpretation, especially if no patterning is evident.

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