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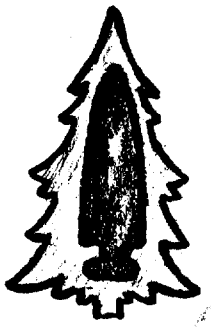

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MAINE ARCHEOLOGICAL SOCIETY

1977

SPRING VOL. 17 NO. 1

MAINE ARCHAEOLOGICAL SOCIETY

OFFICERS

PRESIDENT:	Eric R. Lahti	Rt. 4, Box 99, Skowhegan, Maine
FIRST VICE-PRESIDENT:	Mrs. Richard Soper . . .	P.O. Box 435, Orland, Maine
SECOND VICE-PRESIDENT:	David Cook	Memorial Drive, Winthrop, Maine
SECRETARY:	Robert G. MacKay	P.O. Box 133, Stillwater, Maine
TREASURER:	Jean T. MacKay	P.O. Box 133, Stillwater, Maine
EDITOR:	Judith J. Husson	RR#2, Box G14, East Holden, Maine
ASSISTANT EDITOR:	Marshall L. Rice, Sr. . .	Deer Isle, Maine
ARTIST:	Steven Husson	RR#1, Box 87A, Stetson, Maine

BOARD OF TRUSTEES

TRUSTEES FOR THREE YEARS: (To October, 1979)	William Tufts, Jr. . . .	P.O. Box 126, Madison, Maine
	Duluth Wing	Maine Forest Service, Eustis, Maine
TRUSTEES FOR TWO YEARS: (To October 1978)	David Sanger	37 Forest Avenue, Orono, Maine
	Lloyd H. Varney	15 Elmwood Avenue, Waterville, Maine
TRUSTEES FOR ONE YEAR: (To October 1977)	Paul E. Husson	RR#2, Box G14, East Holden, Maine
	Hoyt T. Hutchins	Penobscot, Maine

ANNUAL SPRING MEETING
MAINE ARCHAEOLOGICAL SOCIETY

HOSTESSES:	Meg Cook	Winthrop, Maine
	Sue Lahti	Skowhegan, Maine
REFRESHMENTS:	Jean MacKay	Stillwater, Maine
	Olive Rice	Deer Isle, Maine
DISPLAYS:	FEATURING - Fossils, Minerals, Artifacts	

COME AND JOIN US!

SPRING MEETING

DATE: 24 April 1977 (4th Sunday)

PLACE: Husson College, Bangor
at Kominski Auditorium

TIME: 11:00 A.M. to 4:00 P.M.

MEMBERS: For this meeting we invite you to bring along your rock and mineral collections, or artifacts. Do come and plan to bring your collected specimens to share with everyone.

From @ 11:00 - 12:30 members may plan to set up their displays.

Bring a lunch if you wish or have a leisure snack. Coffee, tea and some refreshments will be served.

A Directors meeting at 11:30.

The General Society Meeting at 1:30.

PROGRAM:

Our introductory speaker will be Mr. John Clishe, of Lac Megantic, Quebec. He will bring us up to date on the archaeology of neighboring Quebec.

Our second speaker will be Professor Rob Bonnichsen. Professor Bonnichsen, who has recently spent some time up in the Alaskan and Yukon territories (see the article in this Bulletin entitled: "Quest is begun for artifacts, bones of first North Americans"), will speak to us about "Early Man in Northern America." Through faunal analysis, Professor Bonnichsen, hopes to summarize the evidence of man's entry into the New World. He is conducting field research in an arctic area that was clear during the last glaciation. One artifact was dated to more than 25,000 years before present. Dr. Bonnichsen modestly admits to recently submitting a 300 page report for National Geographic of the research he has contributed on the Beringian Early Man Project (Pleistocene bone technology). He plans to show slides of field work being done in the Alaskan and Yukon areas.

ROCKS * MINERALS * ARTIFACTS

See directions to Husson College campus - page 31.

Come and bring a friend. It's a fine way to start a new Spring!

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THE MAINE ARCHAEOLOGICAL SOCIETY, Inc.

CONSTITUTION

Purposes

The purposes of the said corporation are to stimulate the study of archaeology throughout the State of Maine and elsewhere; to promote and encourage scientific research in this field; to conserve archaeological sites, data, and artifacts; to assist in the dissemination of archaeological information; to seek through education to substitute intelligent work for careless and misdirected archaeological activity; to seek to prevent the collection of archaeological specimens for commercial purposes; to serve as a bond among all students of archaeology; and to foster a more rational public understanding of the aims and limits of archaeological research, to the benefit of the people of the State of Maine as a whole. The corporation is not organized for profit and no property or profit of the corporation shall inure to the benefit of any person, partnership or corporation except in the furtherance of the benelovent or nonprofit-making purposes of the corporation.

BY-LAWS

ARTICLE I Name

The Society shall be known as THE MAINE ARCHAEOLOGICAL SOCIETY,Inc.

ARTICLE II Powers

The Society shall have the power to receive, administer, and disburse dues, assessments, and other grants to further its ends; to acquire, and hold absolutely, or in trust, for the purposes of the Society, and convey property, real and personal; to publish papers and reports; to affiliate with other organizations; to establish reagional or functional branches; and to engage in such other activities as are in keeping with the purposes of the Society.

ARTICLE III Membership

SECTION 1 Classes of membership

Membership in the Society shall be divided into the following classes: Individual, Family, Junior, Honorary and Institutional.

SECTION 2 Qualification of members

Any person, without regard to race, color, creed, national origin, or socio-economic background, interested in and willing to support the purposes of the Society as stated in the Constitution, upon application, acceptance, and payment of the appropriate dues may become a member.

A husband and wife may become Family members upon application, acceptance, and payment of the appropriate dues.

Any person under that age of eighteen, sponsored by an Individual or Family member, may become a Junior member upon application, acceptance and payment of the appropriate dues.

Any Organization which subscribes to the purposes of the Society may become an Institutional member upon application, acceptance, and payment of the appropriate dues.

Any adult who has made an outstanding contribution to the science of Archaeology may become an Honorary member upon nomination and election as herein after provided.

SECTION 3 Election to membership

All applications for memberships shall be submitted in writing to the Treasurer, or his duly appointed agent, accompanied by the appropriate dues. Acceptance by the Treasurer, or his agent, shall be deemed election to membership.

Honorary members, after nomination by the Board of Trustees, may be elected to membership in the Society at a regular meeting of the Society.

SECTION 4 Dues

The annual dues of the Society shall be as follows: Individual- $4.00, Family- $5.00, Junior- $2.00, and Institutional- $5.00,Honorary- no dues.

The annual dues may be changed by a recommendation from the Board of Trustees to the members, in writing, at least fifteen days prior to any regular or special meeting and approval of a majority of members at that meeting

The Society fiscal and membership year runs from 1 October to 30 September of the following year, and dues shall be paid on or before 1 October.

SECTION 5 Rights and privileges of members

Each Individual, both husband and wife of a Family, and Honorary member shall be eligible for any elective office in the Society and shall have one vote at all elections and in all transactions of annul meetings of the Society.

A Junior member shall not have the right to vote nor shall he be eligible for elective or appointive office in the Society.

All classes of membership may participate in all Society activities with the above exceptions, and shall be entitled to receive one copy of the regular publications of the Society. The provisions of this section shall not be construed to apply to Special or Occasional Papers for which an additional charge may have to be made.

SECTION 6 Suspension of members for non-payment of dues

Any member delinquent for more than two months shall be notified thereof by the Secretary and if such dues remain unpaid the member shall bedropped prior to the mailing of the Spring Bulletin.

Dropped members may be re-instated by the Treasurer upon paymentof back dues, in which case they shall be entitled to receive the interim publications provided they are available and the postage on such shall be prepaid.

SECTION 7 Expulsion of members

The Board of Trustees, by a two-thirds vote, may expel any member of the Society whose conduct shall be found contrary to the ideals, objectives, or accepted standards of the Society, provided that prior to such vote the member shall be granted a hearing before the Board of Trustees.

ARTICLE IV Board of Trustees

Section 1 Composition

The Board of Trustees shall consist of the President, two Vice Presidents, Secretary, Treasurer, Editor, and the two most recent Past Presidents together with anadditional six members, two of whom shall be elected at each Fall meeting for a term of three years. Subject to these By-Laws each Trustee shall hold office until his successor shall have been elected and qualified.

Section 2 Quorum of the Board of Trustees

Due notice of each meeting of the Board of Trustees shall be given in writing by the Secretary. A quorum of seven members, in person or written proxy, shall be necessary for the transaction of business by the Board.

SECTION 3 Powers of the Board of Trustees

The Board of Trustees shall have all the powers of corporate directors and shall have and may exercise all the powers of the Society except those that are conferred on the membership by these By-Laws. In addition to the foregoing general powers, the Board of Trustees shall have the specific duties as follows:

(a) To manage and govern the affairs of the Society.

(b) To make or to authorize the execution of contracts to further the purposes of the Society.

(c) To expel, after a hearing, any member whose conduct shall be found contrary to the ideals, objectives, or accepted standards of the Society.

(d) To appoint committees within thirty days of the Fall meeting and define their powers and duties.

(e) To establish or disolve subsidiary Chapters, the members of which shall be members of the Society. To determine the minimum number of members necessary to establish or continue said Chapters, and to accept or reject the By-Laws or any amendments thereto of said Chapters.

(f) To publish and distribute to members of the Society a Bulletin or Newsletter and to authorize the publication of Special or Occaisional Papers for sale to members and non-members.

(g) To nominate qualified persons for Honorary Membership in the Society.

ARTICLE V Officers

SECTION 1 Enumeration and General Provisions

The officers of the Society shall be a President, two Vice Presidents, a Secretary, a Treasurer, and an Editor and such other offices as the Board of Trustees may need to create.

All officers shall be chosen by ballot for a term of one year at the Fall meeting of the Society.

No member shall be eligible for or hold the office of President for more than three consecutive years.

The President and other officers when elected, and the two most recent Past Presidents, shall be ex-officio members of the Board of Trustees.

No two offices shall be held by the same person. Subject to these By-Laws each officer shall hold office until his successor has been chosen and qualified.

SECTION 2 The President

The President shall preside at all meetings of the Society and the Board of Trustees. He shall exercise and perform such other powers and duties as may properly belong to his office or as may be assigned to him by the Board of Trustees.

SECTION 3 The Vice Presidents

In the absence of the President, the Vice Presidents, in the order of their election shall preside at mmetings of the Society and the Board of Trustees. The Vice Presidents shall also perform such other dutàes as may be assigned to them by the President or the Board of Trustees.

The First Vice President shall be chairman of the Program Committee and shall, with the Trustees, appoint a committee of three members to assist in this duty.

SECTION 4 The Secretary

The Secretary shall keep an accurate record of all meetings of the Society and of the Board of Trustees. In the absence of the Secretary a Secretary pro-tem shall be appointed by the presiding officer of the meeting. The Secretary shall carry on correspondence on behalf of the Society, notify members of meetings, mail the publications of the Society, and perform such other duties as may be assigned by the Bourd of Trustees.

SECTION 5 The Treasurer

The Treasurer shall, subject to the direction and under the supervision of the Board of Trustees, have the care and custody of the funds of the Society. He shall deposit the funds of the Society in such depository as may be designated by the Board of Trustees. He shall disburse the funds of the Society under the direction of the Board of Trustees. He shall keep accurate records and accounts of the monies received and disbursed in books which at all times be open to inspection by the Board of Trustees. He shall keep an accurate list of members, dues cards mailed, and shall provide the President, Editor and Secretary with an up to date list of paid members.

Upon the election of a new Treasurer the books shall be audited by two members of the Board of Trustees appointed by the President. Upon completion of the audit the funds and records shall be turned over to the new Treasurer.

SECTION 6 The Editor

The Editor and the Editorial Board shall prepare and edit journals, Bulletins or other publications for the Society.They may accept or reject such matter as may be submitted to them for publication. They may incur expenses incident to publication within limits approved by the Board of Trustees. The Editorial Board shall consist of the Editor, the Second Vice President and two other members appointed by the Board of Trustees.

ARTICLE VI Vacancies

SECTION 1 Vacancy replacement

If any office becomes vacant the Board of Trustees may appoint a replacement to serve until the next regular election.

ARTICLE VII Committees

SECTION 1 Regular Standing Committees

The regular standing committees of the Society shall be as follows: Editorial Board, Program Committee, Research Committee, Chapter Expansion Committee. The Board of Trustees shall annually appoint for terms of one year all members of the various standing committees and the Chairman of each. The Board of Trustees may appoint such other committees as may be necessary. Each committee shall at all times be subject to the direction o f the Board of Trustees. No committee shall incur any indebtedness or obligate the Society without the prior approval by the Board of Trustees.

SECTION 2 Powers and duties of Standing Committees

Except as otherwise provided herein or as may be changed by the Board of Trustees, the powers and duties of the regular standing committees shall be as follows:

Research committee. A committee of not less than three members which shall promote, stimulate and encourage research in the field of archaeology and related subjects.

Chapter Expansion Committee. A committee of three members which shall promote and otherwise supervise the establishment of local chapters. It shall also supervise and assist the Chapters in their operation.

Editorial Board. Shall assist the Editor in securing and editing all material for publication.

Program Committee. Shall arrange for the program at each of the regular and any special meetings and shall notify the President of such program.

ARTICLE VIII Meetings

SECTION 1 Regular Meetings

There shall be two regular meetings of the Society per year. One meeting in the spring,and one in the fall which shall include the election of officers. The time and place to be determined by the Board of Trustees. At the fall meeting the first item under "new business" shall be the election of officers and their installation.

SECTION 2 Special meetings

Special meetings of the Society may be called by the President or the Board of Trustees.

Special meetings shall be called by the President, or in his absence or failure to act, by either Vice President whenever so requested in writing by ten percent of the members of the Society entitled to vote.

SECTION 3 Notice of meetings

Notice of the time and place of each meeting of the Society shall be given by written notice mailed to each member entitled to vote at least fifteen days prior to the date of that meeting. If it is a special meeting the notice shall specify the business to be brought before that meeting and no other business except that specified shall be considered by that meeting.

SECTION 4 Quorum

Twenty members entitled to vote, in person or proxy, shall constitute a quorum for the transaction of all business.

ARTICLE IX Elections

SECTION 1 Nominating committee

Before the spring meeting each year the President shall, with the approval of the Board of Trustees, appoint a Nominating Committee of three members and designate one of them as chairman.

SECTION 2 Nominations for office

The nominating committee shall, on or before the first day of September, nominate for each office to be vacant not more than two condidates who shall have indicated their willingness to serve. The Nominating Committee shall submit a list of nominees thru the President to the Secretary who shall include a copy of the list in the notice of the fall meeting. Additional nominations may be made from the floor.

SECTION 3 Voting at elections

Voting for officers shall take place at the fall meeting. Each member entitled to vote may vote for one candidate for each office. Candidates receiving the highest number of votes for each office shall be declared elected. In the event of a tie vote a run-off election shall be held immediately.

ARTICLE X Repository

SECTION 1 Disposition of materials

The members of the Society at any regular meeting or at a special meeting called for that purpose may designate a repository for its collections and records. All material placed in the care of any repository shall be and remain the property of the Society, and shall not under any circustance be considered the property of the repository. Bulletins from other Societies shall be disposed of at the descretion of the Board of Trustees.

The Secretary shall maintain a log of the location and contents of all deposits and shall furnish a copy of said log to the Board of Trustees on request.

ARTICLE XI Distribution of Assets

SECTION 1 Revenue

No part of the revenues of the Society shall inure to the benefit of or be distributed to any member, officer, trustee or other private individual except in the prescribed discharge of authorized Society business and for authorized reimbursment for expenses for services rendered to or for the Society in effecting its purposes.

SECTION 2 Liquidation

Upon termination and dissolution of the Society, there shall be no distribution of property until all debts and material on loan have been fully satisfied. Upon such Dissolution any funds or assets remaining after payment of all just debts of the Society shall be distributed under the direction of the Board of Trustees to such tax-exempt charitable, scientific or educational organizations, associations, funds or foundations whose objectives and purposes relate to the study of Archaeology and Anthropology in the northeast. No member, officer, Trustee or other private individual shall receive any distribution of assets of the Society.

ARTICLE XII Amendments

Amendments to these By-Laws may be proposed by the Board of Trustees or on written petition signed by ten percent of the voting members of the Society. The Secretary shall mail a copy of such proposed amendment to each member of the Society entitled to vote at least fifteen days prior to the meeting at which the amendment is to be acted upon. An amendment may be adopted at any regular or specialmeeting of the Society called for that purpose by a two-thirds vote of voting members present, provided there is a quorum.

Approved by Attorney General's Office 29 Sept 76

Recorded Penobscot County Registry of Deeds 5 Oct 76, Vol 2688, Page 48.

Filed Office of the Secretary of State 22 Oct 76.

CONFLICT NO! COOPERATION YES!!

There is an unfortunate tendency for professional archaeologists to regard amateurs with disdain and an equally disturbing tendency for amateurs to view professionals with distrust and suspicion. This state of affairs is particularly unfortunate as it severely hampers cooperative ventures in a field that desperately needs all the cooperative activity that can be applied. Recently the relationship has been further strained by articles in the news media and by the actions of a few individuals who have done irreparable harm to archaeological sites in the state.

It is also apparent that archaeology is a field that will never be overendowed with funds or enough professionals to accomplish all the work that demands attention, particularly in a relatively poor state like Maine. Whan then can be done to heal this self-defeating schism between the amateur and the professional? Can we put aside our preconceived images of the other and work together harmoniously for the good of the discipline? It not only can be done, it must be done if productive work and progress are to be accomplished.

A first step is to recognize the potential contributions of both groups. There are many areas in which the amateur can relieve the professional of routine tasks; such as site surveys, salvage work in sites that are in imminent danger of destruction, and tracking down leads to potentially valuable sites. Being relieved of these responsibilities, the professional could devote more of his valuable and scarce time to the excavation of more important sites, research and writing. It can and should be a symbiotic relationship.

Amateurs must not be content to remain mere collectors. If we are to be accepted and recognized as important resource people, it is essential to become as well-informed as possible in the discipline. This means reading all the available literature on field technique and the latest reports of important work completed or in progress. Strive to become as professional as your time and resources permit. Earn the title of amateur archaeologist. Do not be afraid to publish your work and make your findings known. Only then will the work of amateurs be recognized. Perhaps it would not be too far-fetched to consider the concept of para-professional among more advanced amateurs. This has been applied to other fields with great success, especially when only limited professional manpower is available.

Professionals also have a great responsibility in promoting cooperation. While the actions of some amateurs who have behaved irresponsibly cannot be condoned, care must be taken not to paint all with the same brush. Professionals can, and should, provide the leadership and guidance needed by all amateurs. This can be accomplished both formally, through field schools, workshops and classes and informally, at MAS meetings or similar gatherings. Amateurs who regard archaeology seriously should be encouraged to contribute to the field.

In conclusion, both groups must be cognizant of their limitations: the professionals their time and finances; and the amateurs their skill and knowledge. If both groups can put aside past differences -- the effort must be made -- the field of Archaeology can only benefit.

Eric Lahti, President
Maine Archaeological Society

A LETTER TO THE EDITOR

"ARCHAEOLOGY IN THE SECONDARY SCHOOL"

Dear Readers:

John Dewey many hears ago postulated that we learn best by doing. Archaeology and archaeological excavation is one method of using Dewey's all too forgotten concept.

For the past two years the anthropology/archaeology class at Sumner Memorial High School in East Sullivan has been involved with archaeology in the classroom and in the field. Naturally the time element is limiting, but we have found it possible to devote at least one-half a semester exclusively to our excavation.

Is this activity relevant? How else can a student gain a working knowledge of geology, math, earth science, biology, primary historical research, and the critical and analytical thinking required of scientific exploration? It seems to me that students learn these disciplines best when out of the classroom and in real situations. Archaeology is one method that makes this possible.

We have also found that an excavation serves to integrate school and community, as well as provide information about relatively unimportant sites that are of interest to citizens of the community.

Our archaeology class at Sumner M.H.S. has been fortunate. A neighbor, Chet Van Cleef, has contributed a portion of his land for our excavations. Mr. VanCleef had earlier observed bone material and unusual disturbances in the land contour. The site area was part of a parcel of land in East Sullivan granted to the Simpson family by King George. Unfortunately, all records pertaining to this area were destroyed by fire in the 1840's. Little is known of human occupation prior to that time.

Our excavation began with site surveys and test digging in the Spring of 1976. A site was chosen owing to land contour, closeness of fresh water, and scattered bone fragments. The grid was layed out in four foot squares with the base line running east to west. I know that you are cringing. Four foot squares! I have a class of twenty students, with a working period of forty-three minutes. Of that forty-three minutes at least thirteen are given to going to and from the dig, receiving daily work assignments and administrative details. Therefore, in order to sufficiently supervise, to provide complete excavation with adequate safe guards and to maintain quality procedures, I have found it necessary to reduce the working area.

The class was taught archaeological method, tool use, artifact identification, as well as information gathering and recording, before starting the dig. Each student was responsible for his/her own measuring and data recording, in addition to maintaining a daily field record. Once in the field concentrated instruction was given on the job by informal (it's nice to be able to smoke your favorite pipe while teaching) lecture and demonstration.

I will not in this article deal with the findings of our dig in detail. Hopefully, I will be able to report in detail at a later time. Briefly, however, we feel that we have uncovered the site of an early 19th century blacksmith shop. Ten inches below this stratum are indications of prehistoric

occupation. As we were beginning to excavate what appears to be a period of Indian activity, winter struck. In the Spring we will continue with the excavation.

Our class has been most fortunate in being able to attempt and implement a program like this. We have a supportive and encouraging principal. We also have on our staff Bill Townsend, a science teacher who is able to identify much of our biological material. Last, but not least, is the availability of the VanCleef site.

If other high school teachers do not have these advantages, they may still initiate a field program of their own. It can be done with a little imagination in almost any school in Maine and the results can be as rewarding as our own have been here at Sumner Memorial High School.

Jeffrey T. Smith, Teacher
Sumner Memorial High School
East Sullivan, Maine

ARCHAEOLOGY NEWS UPDATE

IN MAINE

At the Spring Trustees Meeting David Sanger reported that the State Historic Preservation Office now has an Historical Archaeologist, Dr. Robert L. Bradley, on its staff. This office plans to go to the legislature for partial funding for a Prehistoric Archaeologist. The Commission meetings are open to the public.

Dr. Sanger also mentioned that the Citizens for Historic Preservation is an active group in Maine with a quarterly Newsletter. We may well find areas of mutual interest. Membership is $3.00, address: P.O. Box 197, Bath, Maine 04530. President, Sally Rand.

The MAS has received a Life Membership in the Maine Old Cemetaries Association. Our members are invited to attend their meetings.

The British Columbia Archaeology Association, of Canada, has wardens who act as "watchdogs" to help prevent possible disturbance of potential sites. This Association puts out a publication called, The Midden.

NATIONAL

A notice from the Eastern States Archaeological Association says that they are undertaking a new project. Anyone can now become an individual member for $10.00 a year. Included in the membership are four Newsletters and one major publication for the year.

"A NEW SOCIETY FORMED"

The American Society for Conservation Archaeology was founded in April 1974. Its purpose is to ensure that archaeologists recognize that all excavation destroys a non-renewable resource. In order to use that resource most wisely, the society intends that a high level of professional standards be maintained in archaeological work done under contract, and that sites be at least in part preserved for future exploration. In that way new techniques and new questions can be applied to old sites. In 1975 James Hester, the Acting President, appointed a Steering Committee to discuss the place and function of ASCA in American archaeology, and to draw up a constitution and by-laws. At the annual meeting of the Society for American Archaeology in St. Louis in May 1976, ASCA members officially adopted a constitution and by-laws, and elected a slate of officers. ASCA feels it has an important supplementary and supportive role to play in contemporary American archaeology, particularly in maintaining quick communication concerning legislation, contract problems, federal liaison and other nonresearch aspects of archaeological endeavors. Membership dues are $10.00 and members receive a bi-monthly newsletter. For information write Alexander J. Linday, Jr., Treasurer, ASCA, Museum of Northern Arizona, P.O. Box 1389, Flagstaff, Arizona 86001.

From: Archaeology Magazine
January, 1977, Vol. 30, No. 1.

INVESTIGATING LITHIC SOURCES FOR STONE TOOL MANUFACTURE

Rob Bonnichsen

One of the primary goals of the archaeologist is to reconstruct life ways of aboriginal peoples. Indeed, this is no small order as the prehistorian is attempting to solve the mystery of who did what, when, and where. The clues with which we have to work are the physical remains that survive through time and are preserved in archaeological sites. It is highly probable that the majority of lost items and abandoned garbage left behind at sites do not survive. This is particularly true in the Maine-Maritimes region with its acid soil conditions that destroy perishable materials such as wood, bark, and bone. Consequently, archaeologists attempt to maximize information recovery from the material remains that do survive.

Stone used to make artifacts is one of the principal materials that persists in northeastern archaeological sites. Fortunately, native peoples made many kinds of lithic artifacts such as arrowheads, spear points, net sinkers, adzes, gouges, and bayonets from local rocks. The archaeologist can ask a number of cultural questions concerning non-perishable remains. Armed with a variety of techniques he can reconstruct how stone tools were both made and used. This information in turn contributes to building a picture of how aboriginal peoples made a living.

One of the central questions of concern to modern archaeologists analyzing lithic remains is the kind of materials selected for tool production and use. In fact, this question is basic to understanding how artifacts are both made and used. Rocks were not randomly selected for tool production, but were carefully chosen in light of their material properties. For example, the large crystal size of granite makes it unsuitable for the creation of flaked stone tools such as arrowheads and knives; fine silicious materials such as chert or felsite are much more amenable to shaping through the use of percussion and pressure flaking techniques. By contrast, the highly silicious materials useful for flaked objects are frequently unsuitable for the manufacture of ground stone implements. Materials selected for the production of this kind of artifact must be able to withstand a great deal of shock that is induced by the pecking manufacturing technique. In addition, the material must be sufficiently hard and tough so that a sharp cutting edge can be maintained. Adze blades without these properties would be of little use in cutting down trees.

The availability of lithic materials placed limitations on the kinds of implements that could be produced, which in turn limited the kinds of successful adaptive patterns that could be employed. Furthermore, the limited availability of geological deposits with adequate properties for tool manufacture placed constraints on population movements and/or social interaction. In order to obtain critical tool production materials individuals or groups had to either travel to a quarry source area or establish trade or barter relations with others who had visited the source area. On the basis of surviving archaeological data it can be inferred that most northeast Indian groups did not simply use a single material, but utilized a variety of different kinds of lithic source materials for a variety of purposes. It therefore seems probable that the acquisition of raw materials must have been an important variable that figured significantly in determining what localities groups visited during the annual round.

Two principal kinds of lithic sources can be distinguished. Primary sources are geological outcrops composed of suitable tool producing material; secondary sources are localities that occur where glacial action and water transport have moved lithic materials from the primary source to a new location. Secondary source materials

commonly occur along the edges of lakes and streams in concentrations. Aboriginal peoples exploited both kinds of sources.

Lithic source information can be used to assist in the reconstruction of several kinds of cultural patterns. Let us look at a case example. Artifacts found at the Hirundo site, located near Orono, Maine, by David Sanger's University of Maine research teams, are made of Munsungan chert originally derived from the Munsungan Formation which occurs in Aroostook County in northern Maine. Two major alternatives can be used to explain the movement of the diagnostic rock types from its primary source deposit to the site where it was found. Natives who lived at Hirundo may have visited the source and transported the rock to the site or they may have acquired the material through some kind of trade or barter system. It is very difficult to distinguish which of these two alternatives is more plausible on the basis of the lithic data alone without using other supportive archaeological data.

A complicating factor in northern regions such as Maine, in interpreting material distribution patterns, is the occurence of secondary deposits of lithic materials. Materials that have been redeposited by ice transport and/or by present or ancient river systems were undoubtedly exploited. In such cases the analyst can not say categorically that the rock type under consideration was derived by aboriginal groups from a specified quarry site. He may not be able to link the artifact material with a specific outcrop formation, but if the analyst knows where the bedrock formation occurs from which the secondary material was derived, he may be able to tie the artifact material down to a particular fossil or modern drainage system.

A long term research program, initiated during August 1975, is directed towards the goal of locating primary source deposits of lithic materials exploited by aboriginal peoples in the state of Maine. The program, initially sponsored by the Historic Preservation Commission, was launched in the north central part of the state in the Moosehead Lake and Lower Allagash region. This region was selected as key environmental variables for aboriginal cultural systems have overlapping distributions. Variables believed to be most significant include fish and animal resources used for food and clothing, geographical location of water resources relative to the total drainage critical for boat transportation and occurence of raw material significant for tool production.

Quarry sources are difficult to locate in northeast woodland environments. The forested ground cover, limited road accessability, and glacial till deposits impede systematic survey efforts. Furthermore, there are few historical ethnographic records which would suggest from what areas native groups acquired their stone materials at the time of contact. It is interesting to note that Henry David Thoreau and Warren Moorehead who visited the Moosehead Lake area mention the high quality felsite available at Kineo Island for making arrowheads and spearpoints.

Primarily archaeological techniques have been used for locating outcrops and workshops. In addition to spot checking likely topographic and ecological localities around the edges of modern lakes, a rather unique approach has been developed. Bedrock formations suitable for tool production were isolated on the State Geological Map compiled by Robert Doyle in 1967. This information was plotted against topographic maps which enabled us to isolate likely outcrops that could be exploited for tool production.

Several interesting discoveries have been made on the project which was again continued during the summer of 1976. Isolated felsite outcrops extend from south of Braussa Lake to Baxter State Park. Lithics nearly identical in color to the Kineo

Island deposits were found at other localities in the northeast-southwest trending belt. Thus, the famous gray-green felsites reported in the literature as from Mt. Kineo need not be from Kineo Island, the most prominent source of felsite on Moosehead Lake. Felsite workshops were found in association with other outcrops in the area. Native craftsmen apparently selected tabular pieces of material from the talus slopes at the bottoms of the outcrops rather than mining material from bedrock; a practise commonly associated with flint bearing geological deposits elsewhere in the world.

In addition, chert and tuff deposits in the Munsungan Lake Formation, originally reported by Bradford Hall, Department of Geology, University of Maine, Orono, were preliminarily investigated. This formation trends northeast from Chamberlin Lake and is more than thirty miles long and is rarely more than four miles wide. These lithic materials have a wide range of textures. Prominent colors include blue, black, tan, red, gray and a variety of color combinations. Several workshops were found in association with both primary and secondary deposits of the tuff and chert deposits.

Quarry workshops sites discovered thus far do not appear to be randomly distributed along the axis of the lithic source deposits. Outcrops were apparently selected for tool production that occur adjacent to principal waterways. Excellent tool producing materials were located at interior outcrops; little evidence was found indicating that these resources were exploited. One possible explanation for this distribution pattern is that preforms were mass produced at the quarry outcrops. Heavy preforms may have then been carried by canoe to hunting and fishing stations in other areas where the blanks were transformed into useful tools as changing needs dictated. In addition, the rich lake side environments probably provided needed sustenance during the quarry operations.

Rock samples were collected from outcrops for the purpose of building a comparative reference collection of lithic materials from known source localities that can be used to assist in the identification of lithic materials from archaeological sites. In addition, samples were collected for conducting replicative tool producing experiments.

Preliminary replicative experiments in biface production (preforms for arrowheads and spearpoints) suggest the felsites and cherts dictate different kinds of parameters to which the stone craftsman must conform in producing artifacts. Large massive angular pieces of felsite can be obtained from outcrops. This material is very stiff, quite brittle, and requires substantial blows for the detachment of percussion flakes. The Munsungan cherts and tuffs occur in smaller pieces as bedrock deposits are commonly fractured from tectonic (mountain building) activities. The cherts are softer, not as stiff, and are more amenable to flaking than the felsites and less force is required to detach flakes. However, both interal fractures and bedding planes dictate flake removal angles placing additional constraints on the craftsmen. Thus, it is felt that variance in the initial natural unaltered shape of raw material and its stress resistant properties provide parameters to which craftsmen must conform. A preliminary examination of artifacts from the chert and felsite suggest that different kinds of reduction strategies were used in transforming raw materials into preforms. It seems likely that material differences may ultimately be reflected in certain artifact outline form dimensions. For example, thinner Munsungan chert bifaces can be obtained using the same techniques as on felsite. This is possible because the craftsmen can drive flakes off that parallel the bedding planes in cherts facilitating fracture, but such planes do not occur in felsite. Thus, it appears that material properties are important variables that should be considered in constructing archaeological taxonomies. Tests are planned to quantify material properties in an effort to systematically determine how different materials limit creativity in artifact production.

The felsite and Munsungan chert and tuff samples that have been collected pose interesting analytical problems. One question that we are now faced with is how to distinguish specimens from different sources that look similar as the felsites. On the other hand, how can we recognize materials from the same formation that have grossly different surface colors and textures as do the Munsungan cherts. One way to characterize rocks is on the basis of their chemical elements. A method commonly used in archaeology for this purpose is called trace element analysis. Four types of instrumentation may be used to obtain trace element readings, including mass spectography, X-ray Flouresence, neutron activation, and atomic absorption. At present an analytical program is in the planning stage for initiating trace element analyses in cooperation with the Geology Department at UMO, using the atomic absorption method. Hopefully, the increased resolution provided by this method, as contrasted to visual inspection of hand specimens, will contribute to more precise identifications of lithic source materials.

As previously mentioned, a long range program of locating source materials exploited by aboriginal populations has been initiated as part of the archaeology research program at the University of Maine. One of the goals of this project is to map the distribution of source materials used by aboriginal peoples throughout the state of Maine. In view of the difficulty in finding quarry sources, information pertaining to the location of source materials would be appreciated.

QUEST IS BEGUN FOR ARTIFACTS, BONES OF FIRST NORTH AMERICANS

Bangor Daily News

WASHINGTON (AP) -- Scientists have begun what they call the most intensive quest in history to find artifacts and bones of the first North Americans, the tribes of hunting peoples that emigrated from Asia over a Bering Sea land bridge thousands of years ago.

The three-year project, focusing on eight digging sites in Alaska and one in Canada's Yukon, was announced Tuesday by the National Geographic Society and National Park Service. Each will contribute $300,000 to dig up the lost American history.

Archeologists, anthropolgists, geologists, paleontologists and other scientists are being recruited in this hunt for early man. Scientists said that to date the Soviet Union has done more work on the Siberian travels of these early migrants than Americans have done on those who reached the American side of the land bridge.

Two University of Alaska scientists already engaged in the project, Drs. William R. Powers and Russell D. Guthrie, told a news briefing that their work this summer at one site already has produced promising results.

They found tools and animal bones in charred remains of early man's campfires that have been dated about 12,000 years old. The dig, called Dry Creek, is located about 75 miles south of Fairbanks. The tools and artifacts were made from stone and bone, they said.

Dr. William Irving of the University of Toronto, working at a site at Old Crow in the Yukon, said he made a rare find this past summer -- the jawbone and tooth from an early man.

Irving said the jawbone isn't officially dated yet, but preliminary evidence suggests it's probably more than 20,000 years old.

"If the bone is 20,000 or more years old, it would be one of the oldest (direct) artifacts of man found in northern America," Irving said. Some of the tool fossils found at Old Crow date back more than 25,000 years, he added.

"The specific aim of this project is to get a full picture of what life was like then and hopefully to find older sites and fossils," Guthrie said.

Dr. Robert E. Ackerman of Washington State Univeristy said that as early as 30,000 to 50,000 years ago, people started to drift across the connection between Alaska and Siberia.

"When people say land bridge, they think of a narrow stretch," Ackerman said, "but this bridge was probably 1,500 miles wide in parts and contained a variety of living conditions."

Scientists said the bridge probably began sinking about 14,000 years ago and was under water about 10,000 years ago.

29 September, 1976

A REVIEW OF THE FALL E.S.A.F. MEETING

By
Alice N. Wellman

The Eastern States Archeological Federation Annual Meeting was held in balmy, historic, Richmond, Virginia, November 18-21, 1976. A good turn-out from the Middle Atlantic states was on hand and a scattering from more distant corners despite a conflicting A.A.A. meeting in Washington, D.C. I was the only delegate from Maine and represented the Robert Abbe Museum.

The program proceeded about as announced. One or two papers were deleted including Christopher Turnbull's which I was very sorry not to hear. Several unannounced papers were tucked into the varied and tightly timed sessions (nine twenty minute papers in each session) which began Friday afternoon and terminated on Sunday noon. The quality of the papers was generally high and the visuals excellent. There were site and area reports, language studies, historic archaeology site reports, reinspection of old collections and early reports, ecological problem solving, prehistoric reconstructions, presentations about new excavation techniques and approaches, cross-disciplinary studies and typology and seriation papers - - everything from European Trade Axes, to ceramics, to Colonial Hoes.

The book sales area did landoffice business and the exhibits room had a quantity of well-displayed, interpretive offerings.

Ivor Noel Hume's after dinner talk, "The West Indies and the American Revolution: An Archaeological Perspective", was comprehensive, fascinating and delivered in his own inimitable style.

Several important votes were taken at the Annual Meeting. E.S.A.F. will now accept individual sponsoring memberships at $10 per person. These are non-voting members, but will receive notifications of the Annual Meeting, one publication per year at a reduced rate, the annual Bulletin with its proceedings and abstracts and the ESAF newsletter, the first issue of which will come out in early Spring, 1977. Individual membership dues can be sent to:

Edmund K. Swigart, Treasurer ESAF
Box 85
Washington, CT 06793

A non-voting institutional membership was also approved which entitles an institution to notices and publications and attendance at the annual meeting.

The new newsletter co-chairmen are Jim and Marianne Akerman. They are soliciting member society news, announcements and suggestions for a catchy name. All correspondence for the Newsletter should be sent to them at RD 1, Box 111, Landenburg, PA 19350.

E.S.A.F. now has a business office:

Faye L. Stocum, Business Manager E.S.A.F.
Island Field Museum and Research Center
RD 2, Box 126
Milford, DE 19963

New officers elected at the Annual Meeting were: President, Ronald A. Thomas; President-Elect, Martha Potter Otto; Corresponding Secretary, Richard George.

Next Fall's Annual Meeting is already in the advanced planning stages. It will be held in Hartford, Connecticut, November 3 through 6. Persons with suggestions for session themes or who wish to present papers are urged to get in touch with Program Chairman, David H. Thompson, 444 Sperry Road, Bethany, CT, 06525. In charge of meeting arrangements is Roger W. Moeller, Box 85, Washington, CT, 06793.

Both Maine member societies should be able to send good delegations to Hartford. E.S.A.F. meetings are truly worthwhile. Attendance is at least one half avocational archaeologists and they still are the backbone of the organization. Although the papers tend more and more to be given by professionals, they are well within the ken of any interested member. Do set that weekend aside for E.S.A.F. in Hartford!

SOME THOUGHTS ON THE SCARCITY OF ARCHAEOLOGICAL SITES IN MAINE BETWEEN 10,000 AND 5,000 YEARS AGO

David Sanger

Introduction As archaeologist working in northern New England, adjacent New York, and the Maritime Provinces of Canada began to relate the various cultural complexes to the radiocarbon time scale, it became apparent that a substantial portion of the prehistoric period was under-represented. This period runs from about 10,000 radiocarbon years ago to 5,000 years ago. In the traditional stage terminology it covers the early and middle Archaic. The purpose of this paper is to examine and evaluate the major hypotheses that have been advanced to explain the scarcity of sites and artifacts referable to the early and middle Archaic stages in the state of Maine.

Systematic archaeological research in Maine is a relatively recent phenomenon. It was not until 1966 that a local institution (University of Maine at Orono) hired a staff archaeologist. In the ensuing decade the number has grown considerably and each year sees greater activity. Despite the systematic surveys, the excavation programs, and the large number of private collections viewed, artifacts that can be attributed to the period 10,000 to 5,000 years ago are surprisingly scarce. The oldest artifact recognized from this period is a deeply-serrated, corner-notched, brown chert specimen from a mud flat on Newberry Neck in the central Maine coastal area. There are enough similarities between this specimen and some found in West Virginia (Broyles 1966, 1971) to suggest a relationship, although the distance involved is great. However, the presence of bifacial projectiles in the Neville site, Manchester, N.H. (Dincauze 1976), which also show strong similarities with Atlantic coastal sites, suggests these wide ranging comparisons may be justified.

Bruce Bourque (1971) has called attention to Neville-like points from the Basin site on North Haven Island, and recently, similar artifacts have been recovered from the Cobboseecontee site near Augusta (Bourque, personal communication). Another Neville-like point was found at the Hirundo site, near Alton (Sanger and MacKay 1973: Sanger 1975: Figure 2:E). On purely comparative grounds, these points should date to at least 7000 years ago (Dincauze 1976:29). Also at the Hirundo site, in what is called Assemblage 1 (Sanger and others, n.d.) there is a serrated biface and a small stemmed biface, together with small quartz scrapers and large felsite flakes, stratified beneath materials reminiscent of the Vergennes phase of the Laurentian Tradition (Ritchie 1965). Assemblage 1 is not dated by radiocarbon but it should be older than 5000 years ago. At the stratified Turner Farm site on North Haven Island, Bourque (1975) has illustrated small, stemmed bifaces in Occupation 1 dated to about 5300 radiocarbon years ago. Finally, Byers (1959) has reported a massive flake and core assemblage at the base of sites in the Ellsworth Falls area. If this is a discreet assemblage (see Ritchie 1965:32 for criticsm), it should also be older than 5000 years as it underlies Vergennes-like materials similar to those found at the Hirundo site. In summary, the evidence for well-established human populations in Maine between 10,000 and 5,000 years ago is scanty, to say the least.

The exact reasons for the scarcity of artifacts will probably never be satisfactorily resolved, because of the inevitable value judgements that will be involved. In the following pages I will discuss the dominant explanations and the reasoning behind them. To some extent we can identify and build upon reasonably "firm" data that have a bearing on the problem, but because none of the explanations can be proven as factual, I have called them "hypotheses." Behind these hypotheses there is a particular theoretical viewpoint or philosophy that I have attempted to identify.

Hypothesis 1 Data Too Incomplete

This hypothesis is basically unwilling to admit that there is a gap in the cultural record in actual fact. It suggests that the evidence is washed away or otherwise destroyed, or that the artifacts from the pre-5000 year period are basically unlike those found further to the south and therefore not likely to be recognized. The concept points up the scarcity of systematic work in the Maine area, especially in the more inland areas where sea level rise and erosion would not have been a problem (Bourque 1975). The fact that Neville-like points have been found in Maine, however, suggests that other more southerly Archaic specimens might be expected. It gets more difficult to enthusiastically embrace this hypothesis when one sees the very extensive collections attributable to the period beginning around 5000 years ago, and the absence of anything earlier in so many of the collections. If there was a sizeable population in Maine prior to 5000 years ago, and if that population made artifacts in stone of a different sort than those found to the south and to the north, then there should be a substantial number of unidentifiable specimens in collections. Such does not appear to be the case, however, and the suggestion that there were people but we don't know what to look for, is not, in my opinion, very likely.

Hypothesis 2 The Drowned Sites

This hypothesis is based on the observation that sea levels in the Gulf of Maine have been rising from an early post glacial level of perhaps as much as 60 meters lower than present. Although the precise low level is unknown, there can be little doubt that sea levels were once substantially lower (Grant 1970). If man was concentrated along the coast prior to 5000 years ago, then the sites would be covered by rising sea levels and eroded away. In its extreme form this hypothesis explains the lack of interior remains by having the entire population in the coastal strip. The chief proponent of this explanation is James Tuck (1975). McGhee and Tuck (1975) have excavated artifacts from raised beaches on the Labrador coast that have a number of suggestive similarities with Neville points from New Hampshire. Although the dating is not as certain as desirable, there is some evidence in Labrador to suggest a coastal adaptive pattern between 10,000 and 5,000 years ago. Tuck (1975) interprets the presence of stemmed bifaces in Labrador as evidence of a once continuously-distributed coastal adaptation pattern stretching from the southern Atlantic states to Labrador.

The scarcity of similar artifacts throughout Maine and the Maritimes raises a serious question about the validity of the continuous distribution model, unless the sites can be shown to be eroded away, a virtually impossible thing to demonstrate. There is not much doubt that any site located at sea level 7000 years ago would be eroded, but that settlement pattern does not fit the archaeological evidence from the Neville site which is located 35 miles from the present sea coast. The presence of artifacts similar to Neville points at Cobbossecontee and Hirundo sites in Maine likewise suggests that occupation was not exclusively along the coast. It must also be remembered that Labrador is very different from Maine today, and one cannot assume anything like similar resources for man over 5000 years ago that would have lead to rather similar appearing adaptive techniques, as expressed in projectile point form. This criticism implies that there is a causal relationship between projectile point form and the way man adapts to his environment, which in itself is a particular theoretical viewpoint, to which not all archaeologists would subscribe.

Hypothesis 3 The Forest Hypothesis

In the Northeast region, William Ritchie (1965) recognized the relationship between the Lamoka and Laurentian Archaic traditions and the deciduous forest of mid-Holocene times. James Fitting (1968) elaborated the hypothesis that the lack of early to middle Archaic remains in the Northeastern sites was attributable to a forest type felt to be unsuited to high populations of animals and humans. Fitting called this forest form "Boreal Forest" on the basis of similarities in vegetation with the current forests of Canada just south of the tundra zone (Fitting 1968:442). This hypothesis explains the relative scarcity of human remains between 10,000 and 5,000 years ago by reference to a forest form made up largely of spruce, pine, birch, and alder, that is considered to be of low carrying capacity for animals important to man's survival. The hypothesis suggests that after about 6,000 years ago the forests of the Northeast became dominated by deciduous species of trees with a substantial increase in the carrying capacity for human needs.

This hypothesis is derived from the theoretical position that regards the culture-environmental relationship as very important. This model has a wide following among prehistorians working with the cultures of hunters and gatherers, but it does depend upon an accurate reconstruction of the carrying capacity based on floral and faunal resources. It is important to assess our abilities to accurately reconstruct past environments, because the credibility of the hypothesis rests on the technical accuracy of our paleo-environmental reconstructions.

There are a great many techniques available to the scientist wishing to reconstruct paleo-ecological systems. Some are much more direct than others, by which I mean, they have the ability to give us a picture without a long chain of inferences. For example, an archaeologist might want to know whether a prehistoric people regularly hunted deer or caribou, or both. Obviously, the best way to ascertain this would be to find remains of animals in the sites and from the bones and teeth reconstruct how many of each species were represented. In Maine, however, because pH values in interior sites average from 4.7 to 5.3 bones are rarely preserved. Lacking faunal remains the next step might be to infer the mammal population from a reconstruction of past forests. Even if we can accurately reconstruct forests, inferences still have to be made regarding the most likely animals. Each time inferences are built upon previous inferences the final interpretation must be weakened. Every opportunity must be taken to verify all steps in the chain of inferences by repetitive experiments, or by different test procedures yielding comparable results.

For many years botanists have used the technique of palynology to reconstruct past vegetation. Working with those trees and plants that reproduce by wind-borne pollen, palynologists have learned to interpret the pollen stratigraphic record left in bog and lake sediments. Experiments have shown that certain species over-produce in comparison with others, and thus equal numbers of pollen may not indicate equal numbers of tree types in the local forest. A classic case of over-production in this sense is spruce which is also subject to long distance transport by wind. Another pressing problem is that of species identification. Although it is usually possible to determine the genus level, it may be very difficult or even impossible, given current techniques, to identify the species in all instances. For those genera which can adapt to a wide range of environmental conditions, such as birch and oak, this becomes a serious problem when attempting to reconstruct forest forms. Differential perservation of pollen is another difficulty. These and other problems are discussed in detail in various publications detailing the methods of palynology.

Even when the pollen is identified correctly, and the various over and under representation problems are solved, there still remains the subjective assessment of forest type. Forests do not occur as types naturally; we decide on the types

arbitrarily for convenience. Species will overlap in their ranges, so that the forests are in reality made up of a series of species combined in a variety of ways. It is important to remember, therefore, that the various forest categorizations are subjective abstractions. Furthermore, it is entirely possible that modern forest types have no prehistoric analogues. M. D. Davis (1969) has suggested this in the case of the "boreal forest." In Davis' opinion, the modern forest configuration we call "boreal forest" may be a relatively recent phenomenon. Some of the reasons why certain current forest types may have no prehistoric analogues include: man-induced disturbances, such as the cutting of native species and the introduction of new; differential colonization rates of species migrating into new areas following deglaciation; plant pathologies; and unique paleo-climates.

For man, the critical thing is the prevalence of individual species that provide important foods for man or for animals that man eats, rather than the forest type. This point is frequently overlooked by archaeologists attempting to make precise correlations between forest types and prehistoric cultures. The need for caution is obvious when we use a term like "boreal forest" and then apply it to a period prior to 5000 years ago.

The difficulty inherent in the boreal forest explanation does not imply that the basic hypothesis is in error. That is, it is quite possible that the Maine forests up to 5000 years ago were relatively unsuited to hunters and gatherers, especially if they had a technical pre-adaption to a rather different forest resource base. This point was made by T. Bradstreet (1973), in a slightly different way. Bradstreet hypothesized that any artifacts in Maine between 10,000 and 8,000 years ago would look like those found further south at the same time. He based this on the fact of rapidly changing environments at this time, arguing that the basic instability in environment would not allow for a unique culture to develop. As a hypothesis it has merit because it is testable <u>provided</u> we find evidence of man between 10,000 and 8,000 years ago.

It is clear from the paleo-vegetational record in Maine that the period between 10,000 and 5,000 years ago witnessed a forest composite rather different from the modernconditions (R. Davis and others 1975; Sanger and others n.d.; Sanger 1976). The early forests were characterized by high white pine pollen counts with moderate birch (species unknown). No really good modern forest analogues are recognized. A major difference between the forests of 10,000 to 5,000 years ago and late prehistoric Maine forests is the presence of greater diversity of hardwoods in the latter and a decrease in pine. The early forests may have lacked suitable tree and shrub species to support large populations of game animals such as deer and moose, and this factor, it could be argued, restricted the presence of man in the area.

An impressive point in support of the vegetation hypothesis is the presence of substantial cultural activity coincident with a major shift in forest forms. Pollen diagrams in central Maine indicate a shift from a conifer-hardwood forest to one with many more hardwood trees (Sanger and others n.d) about 5000 years ago. In several diagrams there is a marked increase in maples and other browse species suited to deer. This change coincides with the presence of a culture whose closest similarities are with the Vergennes phase of the Laurentian Tradition of the St. Lawrence River region. Ritchie (1965) attributes the presence of the Laurentian Tradition in New York in part to the development of the hardwood forest.

In summary, the correspondences between the softwood-hardwood forest and the scarcity of artifacts between 10,000 and 5,000 years ago is suggestive. The lack of suitable game animals and other resources hypothesis is strengthened by the coincidence of a hardwood forest and relatively abundant cultural remains. Implicit in the forest

hypothesis is the assumption that the forest resources played the key role in determining the level of human adaptation. This may be the case, but one should not overlook the tremendous resource available to man in the rivers and lakes of Maine. It is all too easy to project into the past the ethnographic image of the Abnaki as predominantly hunters and therefore dominated by the productivity of the forest. This assumption is examined in hypothesis 4.

Hypothesis 4 The River Gradient Hypothesis

This is a new hypothesis approached in a recent paper in a slightly different form (Sanger and others n.d.). When the Europeans began first to record the activities of Maine's Indians in any appreciable detail it was already early in the 17th century, nearly a 100 years after the initial contacts. During this century of contact there apparently occurred a change in aboriginal settlement and subsistence, so that the summer/interior --- winter/coastal pattern of seasonal movement became reversed, probably in response to the summer voyages of Europeans and the developing trade in furs (Bourque 1973; Sanger 1971; Sanger and Sanger 1974). This reversal tended to emphasize the hunt and de-emphasize the importance of fishing. It seems apparent, however, that when one plots the distribution of sites in Maine there emerges a high correlation between large sites and good fishing spots. Sites such as Hirundo are prime examples of this very common pattern (Sanger and others n.d.).

The recognition of the potential importance of fish in the diet of Maine's prehistoric inhabitants indicates that we should be making inquiries into the history of the fish populations and the river systems they inhabited.

Unfortunately, the fossil fish record is non-existent in Maine, except in the coastal shell middens. One possible approach would be to assemble a detailed picture of the ecology of the primary fish species used for food, and then reconstruct the available habitat during the prehistoric period. For example, modern experience has shown us that some fish have a greater capacity than others for swimming and jumping up over rapids. Theoretically, if one could reconstruct for any given time the gradient of the river system it should be possible to assess the potential of a comparatively weak fish species, such as alewife, to ascend that river to spawn. Similarly, water temperature, bottom conditions, predators, and nutrients all contribute to the ability of any river system to sustain a viable fish population. The techniques for determining these variables are complex and may never produce satisfactory resolution. Nevertheless, archaeologists must take these factors into account in any explanation of Maine's prehistory. One approach to river gradient is an understanding of the sea levels in the Gulf of Maine through time. Maine's rivers drain into the Gulf of Maine achieving an equilibrium with sea level. As the sea levels rose the lower valleys of the rivers became "drowned" and estuaries were created. Any watervalls or other barriers to fish migration in the lower stretches of rivers would then become inundated and thus removed. Assuming that land movements have not been significant in the last 10,000 years, the rising sea levels would seem to be a major factor influencing fish colonization of rivers. In addition to the river gradients, archaeologists should also consider the depositional regime as bottom sediment is partially a factor of river energy as well as materials being deposited in the rivers from land erosion. The problem is a huge one and it cannot be solved overnight. It is important, though, to recognize as many of the parameters as possible so as to avoid simplistic man-environmental statements, especially those that assume without any thought or evidence, that modern conditions prevailed in the past.

In summary, the river gradient-fish hypothesis emphasizes the importance of fish to the prehistory inhabitants of Maine. It suggests that archaeologists should at

least explore the possibility that changes in sea level may have made available to anadromous fish, river systems previously denied by virtue of a too steep gradient. The addition of fish into the survival formula for prehistoric man represents the main departure from the vegetation hypothesis.

Discussion Assuming that there was in fact very low human population density in Maine between 10,000 and 5,000 years ago, several explanations, or combinations of explanations, are possible. For purposes of discussion these have been arranged into separate hypotheses, but the proving of one does not invalidate the others; they may all be right to a degree. All of the hypotheses are dependent upon a set of assumptions, some of which are unproven at best. An important realization, brought out by the excellent palynological work in Maine, is that the past vegetation communities were quite different from that typifying central Maine only a few centuries ago. One approach is to suggest that these forests were incapable of sustaining animal and plant life necessary for humans. A related approach is to suggest that people at that time lacked the technological means to live in Maine's forested interior. Still another is to suggest that the majority of sites were located in the maritime zone and therefore destroyed by rising sea levels. A recent development is the question of the carrying capacity of the rivers draining into the Gulf of Maine, especially their ability to sustain the anadromous fish.

In order to solve the vexing problem it will be necessary to develop a well-integrated research program. This program should systematically survey archaeologically unknown parts of Maine in search of sites or artifacts from this time period. Large portions of the state have never been systematically surveyed and, because of past destruction, may never be properly sampled. On the basis of the hypotheses advanced, it seems possible that we will eventually find that early and middle Archaic remains become less plentiful as one travels from west to east, that is, from southern New England to the Maritime Provinces. The reason for this is that there seems to be a west to east time transgression of the higher productivity hardwood type forest. In addition, it is also possible that sea level rise relative to land surfaces has been less pronounced in the western end of the Gulf of Maine, effecting fewer river gradient changes. These remain highly speculative thoughts at this time, but they do suggest stimulating and worthwhile directions for future research in the study of Maine's prehistory.

REFERENCES

BOURQUE, Bruce 1971 Prehistory of the Central Maine Coast. Unpublished PhD. Thesis. Harvard University.

1973 Aboriginal Settlement and Subsistence on the Maine Coast, Man in the Northeast, Number 6, pp. 3-20.

1975 Comments on the Late Archaic Populations of Central Maine; the View from Turner Farm, Arctic Anthropology, Vol. XII, No. 2, pp. 35-44.

BRADSTREET, Theodore 1973 Pollen Influx Diagram and Associated Quaternary Geology From Moulton Pond, Maine, M.S. Thesis, University of Maine.

BROYLES, Betty J. 1966 Preliminary Report: The St. Albans Site (46 Ka 27) Kanawa County West Virginia. The West Virginia Archaeologist 19:1-43.

1971 Second Preliminary Report: The St. Albans Site, Kanawha County West Virginia, Report of Archaeological Investigations No. 3, West Virginia Geological and Economic Survey, Morgantown.

BYERS, Douglas S. 1959 The Eastern Archaic, Some Problems and Hypotheses American Antiquity, Vol. 24, No. 3, pp. 233-256.

DAVIS, Ronald, BRADSTREET, Theodore, STUCKENRATH, Robert, and BORNS, H. W., Jr. 1975 Vegetation and associated environments during the past 14,000 years near Moulton Pond, Maine, Quaternary Research, Vol. 5, pp. 435-465.

DAVIS, Margaret B. 1969 Palynology and Environmental History during the Quaternary Period, American Scientist, 57, pp. 317-332.

DINCAUZE, Dena F. 1976 The Neville Site, Peabody Museum Monographs No. 4, Harvard University Press.

FITTING, James 1968 Environmental Potential and the Postglacial Readaptation in Eastern North America. American Antiquity, Vol. 33, No. 4:441-445.

GRANT, Douglas R. 1970 Recent Coastal Submergence of Maritime Provinces, Canada. Canadian Journal of Earth Sciences Vol. 7 Part 2:676-689.

MC GHEE, Robert and TUCK, James A. 1975 An archaic Sequence from the Strait of Belle Isle, Labrador, Mercury Series No. 34, National Museum of Man, Ottawa.

RITCHIE, William A. 1965 The Archeology of New York State. The Natural History Press, New York.

SANGER, David 1971 Prehistory of Passamaquoddy Bay. A Summary. Bulletin of the Maine Archaeological Society Vol. 11, No. 2, pp. 14-19.

1975 Culture Change as an Adaptive Process in the Maine-Maritimes Region, Arctic Anthropology, Vol. XII, No. 2, pp. 60-75.

1976 An Introduction to the Archaeology of the Maine-Maritimes Region, Maine Archaeological Society, Bulletin, Vol. 16, No. 1, pp. 6-14.

SANGER, David
DAVIS, Ronald B.
MAC KAY, Robert
BORNS, Harold W. Jr.
n.d. The Hirundo Archaeological Project - An Interdisciplinary Approach to Central Maine Prehistory Paper read at the 1976 Meeting of the New York Academy of Sciences. Paper in Press.

SANGER, David and
MAC KAY, Robert G.
1973 The Hirundo Archaeological Project - Preliminary Report. Man in the Northeast 6:21-29.

SANGER, David and
SANGER, Mary Jo
1974 The First 11,000 Years: An Archaeological View of Maritimes Prehistory Paper read at the 1974 meeting of the Atlantic Provinces Historical Conference, Fredericton, New Brunswick.

TUCK, James A.
1975 The Northeastern Maritime Continuum: 8000 Years of Cultural Development in the Far Northeast, Arctic Anthropology, Vol. XII. No. 2, pp. 139-147.

MAINE ARCHAEOLOGICAL SOCIETY, INC.

Trustees Meeting — Carriage Inn, Pittsfield — 13 February 1977

Present: Lahti, Cook, Sanger, Husson, Husson, Rice, MacKay, and MacKay.
By Proxy: Hutchins, Wing and Soper.

Business Undertaken:

Spring Meeting - Time set for Sunday, 24 April 1977. To try for Husson, with UMO as stand-by. Were successful in getting Husson. Meeting will be held at Kominsky Auditorium, Husson College, 11:00 A.M. to @ 4:00 P.M. The College will provide directional signs on campus. Trustees will meet at 11:30, Society meeting at 1:30.

Program - Introductory speaker: Mr. John Clishe, of Lac Megantic, Quebec. Professor Rob Bonnichsen will speak on the BYRP (Beringia Yukon Refugium Project).

NEW LEGISLATION: This year only 50% of the members renewed under their own power. In January notices were mailed to the remainder - returns are still dribbling in. These late renewals mean a lot of extra work and cost. It was voted that a 50¢ surcharge be made for those not paid by the first of February.

Under Discussion: There was a general discussion of repositories (to house possible library collections and/or artifact collections); also the possibility of a Museum Building. No action.

Robert G. MacKay, Secretary

RGM/sdb

Robert G MacKay

Permanent Mailing Address:

The Maine Archaeological Society, Inc.
Dept. of Anthropology
University of Maine Orono
Orono, Maine 04473

MAINE ARCHAEOLOGICAL SOCIETY, INC.

Minutes of the Trustees Meeting held at the MTA Building, Augusta, 24 October, 1976.

Present: Lahti, Rice, Wing, Laselle, Varney, Soper, MacKay and MacKay.

The following slate of officers to be submitted to the ensueing business meeting of the Society:

President:	Eric R. Lahti, Rt. 4, Box 99, Skowhegan, Maine 04976
1st V. President:	Mrs. Richard Soper, P.O. Box 435, Orland, Maine 04472
2nd V. President:	David Cook, Memorial Drive, Winthrop, Maine 04364
Editor:	Judith J. Husson, RR#2, Box G14, East Holden, Maine 04429
Ast. Editor:	Marshall L. Rice, Sr., Deer Isle, Maine 04627
Treasurer:	Jean T. MacKay, P.O. Box 133, Stillwater, Maine 04489
Secretary:	Robert G. MacKay, P.O. Box 133, Stillwater, Maine 04489

CONTINUING TRUSTEES:

1 year:	Hoyt T. Hutchins, Penobscot, Maine 04475
2 years:	David Sanger, 37 Forest Avenue, Orono, Maine 04473
	Lloyd H. Varney, 15 Elmwood Avenue, Waterville, Maine 04901

NEW TRUSTEES:

1 year:	Paul E. Husson, RR#2, Box G14, East Holden, Maine 04429
3 years:	William Tufts, Jr., P.O. Box 126, Madison, Maine 04950
	Duluth Wing, Maine Forest Service, Eustis, Maine 04936

Secretary was instructed to send a complimentary membership and Bulletins to John Clishe, Agnes Street, Lac Megantic, Quebec.

Secretary to apply to Orland Post Office for Bulk Mailing Permit.

Secretary to apply to IRS for tax exempt status.

Secretary to prepare copy of new Constitution for the Spring Bulletin.

It was suggested that a fossil/mineral display might be interesting for the Spring Meeting.

Meeting Adjourned.

Robert G. MacKay

Robert G. MacKay, Secretary

RGM/sdb

MAINE ARCHAEOLOGICAL SOCIETY, INC.

Minutes of the Annual Business Meeting of the Society held at the MTA Building, Augusta, 24 October, 1976.

Meeting called to order by President Lahti. President's Report, Secretary's Report and Treasurer's Report, read and accepted.

Summary for fiscal year just closed.

1 October, 1975, on hand	$454.40	
Income from dues and sale of Bulletins .	733.70	
		$1,188.10
Expenses including publication of Vol. 15, #1, and Vol. 15, #2, typing for Vol. 16, #1, and miscellaneous postage, and incorporation fees.	793.94	
30 September, 1976, on hand		$ 394.16

The MacKays were appointed delegates to the ESAF meeting in November.

Dr. Bruce Bourque spoke on his recent research in Maine Archaeology.

Dr. David Sanger reported on the summer work on the St. John flowage area, Acadia National Park and State Highway survey work.

Eric Lahti showed slides of the Machiasport Petroglyphs.

Between speakers the Katakouans, under the direction of Lloyd Varney, presented a series of Indian dances.

A large and varied display of artifacts was much appreciated.

There being no further old or new business the meeting adjourned.

Robert G. MacKay

Robert G. MacKay, Secretary

RGM/sdb

"A VIEW FROM THE LAKE"

Dear Readers:

Imagine, if you will, a small overcrowded sanctuary, with books for walls; and accumulated papers stacked on dusty shelves. Several "rocks", shaped suspiciously like projectile points, are grouped in significant clusters on tables and in open drawers. Quadrangle maps, pinned to the backs of doors and draped over half-empty chairs, gives us a clue that the intent to explore and investigate is ever present. Pieces of bone, potsherds, felsite, teeth, cherts and charcoal characterize this special room. Sound familiar?

Although the room described above is this writer's cache of prehistory; it could be anyone's Archaeology Lab. Let's look, for a moment, through the picture window of this lab. Outside, the lake looks like a vast, white wasteland (remember - it's February and Green Lake is nine miles long). Buried beneath this body of water and on its wooded shores lies an unrecorded history of human occupation.

The setting depicted above is the editor's attempt to arouse old curiosities concerning man's prehistory. During the winter months, for many of us, the desire for field experience lies dormant. Now, with the Spring thaw upon us, we can, once again, become active participants.

Some people have already started their Spring participation in archaeology. Many of you are digging out (no pun intended) old, artifact collections that were stashed away for the winter. Others of you are doing some reading, planning for summer digs or conducting research. Those people who have contributed to the making of the Spring Bulletin are actively participating in archaeology also.

Since we are forever striving to put together a good Bulletin, one that will appeal to the widest audience possible, I find it desirable, as your editor, to share and to ask a few thoughts of you. Putting together an archaeology bulletin can produce a spirited clash of viewpoints. This editor invites you to write "a letter to the editor" expressing your views about such things as: what types of articles would you like to see published in the Bulletin? What special area of archaeology would you like to know more about (examples: geology, botany, glacial, dating techniques, what?)? Write a letter to the editor telling us what you would like to have for programs at the Spring and Fall meetings. For example: Earl Shuttleworth recently asked Dave Sanger and Rob Bonnichsen (both resident archaeologists at the UMO) to work on State Planning, to develop the state's posture towards archaeology (site preservation). Dr. Sanger suggested this as a possible topic for a MAS meeting. What do you think? These are just a few suggested areas of interest. The Bulletin is your publication. Member participation is welcome and encouraged.

Another area in which members are encouraged to participate is the Eastern States Archaeological Federation meeting in the Fall. See Wellman's article in this Bulletin. This year the E.S.A.F. will be meeting in Hartford, Connecticut. A mere stone's throw away! Everyone is invited.

By the time you read this the lake-ice will have turned a mysterious black, dissolved into a giant honeycomb, and stealthily disappeared. Look down at your feet and behold.....bare earth. Have a good summer and record a Happy Digging!

Judith Husson, Editor

NEW BOOKS FOR YOUR LIBRARY

Flint Working Techniques of the American Indians, an experimental study, by Holmes Ellis, Ohio Historical Society, Columbus, Ohio.

The Amateur Archaeologist; Issue # 1, 52 pages, $2.00, one year subscription $8.00 (4 issues). Send order to: The Amateur Archaeologist, P.O. Box 8012, Wichita, KS 67208.

The Archaeology of North America, by Dean Snow (a former resident archaeologist at UMO), 272 pages, 23 color photographs, 168 black and white photographs, 13 maps, bibliography. Viking Press, New York, 1976, $18.95.

The New Archaeology, by David Wilson, BBC science correspondent. David Wilson charts the effect of revolutionary scientific advances (radiocarbon dating, dendrochronology, aerial photography scanning, etc.) upon our knowledge of the prehistory and history of man's development. A Meridean Paperback F448/$5.95. Send to: New American Library, Box 999, Bergenfield, New Jersey 07621. 40¢ per copy for handling. Allow 3-4 weeks for delivery.

EDITORIAL POLICY

All manuscripts and articles should be submitted to the Editor. Originals will be returned if requested.

Any article not in good taste or plainly written for the sake of controversy will be withheld at the discretion of the Editorial Board.

The author of each article that is printed will receive two copies of the Bulletin in which his work appears.

Deadlines for submission of manuscripts:

February 1st, for Spring issue

August 1st, for Fall issue

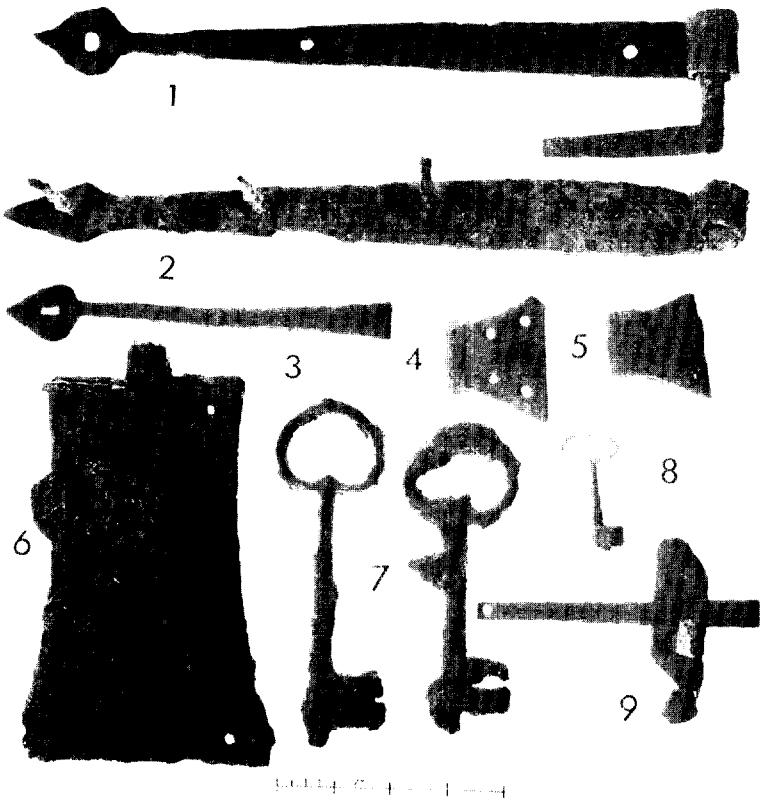
Original manuscripts for review for publication should be typewritten and double spaced on one side of each page. Illustrations should be planned for half or full page reproductions; leave 3/4" margins all around. Line illustrations should be done on white paper with reproducible black ink.

Marshall will be resuming his position as Editor for the Fall Bulletin, all manuscripts should be sent to him. I will remain on staff as Assistant Editor; therefore, all "letters to the Editor" may be mailed to me, since I have invited your response.

Plaudits to the many people who have contributed to the making of the Spring Bulletin.

DIRECTIONS TO HUSSON COLLEGE CAMPUS

Take the Broadway Exit off Interstate 95. Turn right off the 95 Exit. Going out Broadway; pass through the first light intersection (see Dunkin' Donut on the right); pass through the second light intersection (see MacDonald's on the left); pass Kelley Pontiac (on the right). A few feet beyond Kelley Pontiac see a Carpet Shop. Turn at the first left beyond the Carpet Shop. Follow this road @ 1/2 mile in to the campus. Come to your first stop, then drive straight across, going a few yards to the next stop (see signs: Newman Center, etc.), You are at the circle now - turn right onto the circle. Drive a few yards, you will see the Administration Building on the left. The Administration Building has two major front entrances; you should continue past the first entrance (Peabody Hall) and enter the building at the second entrance. Kominsky Auditorium is to your right as you enter.



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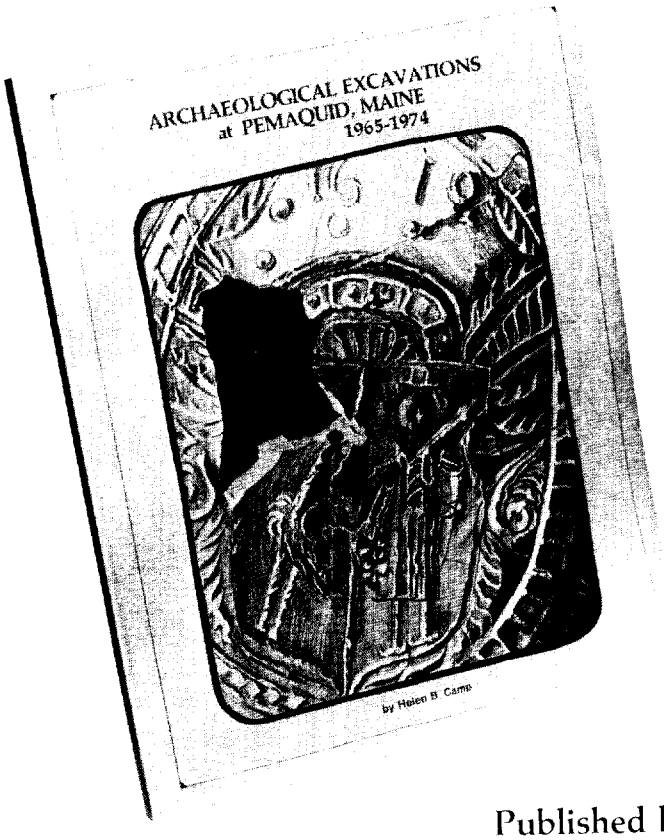

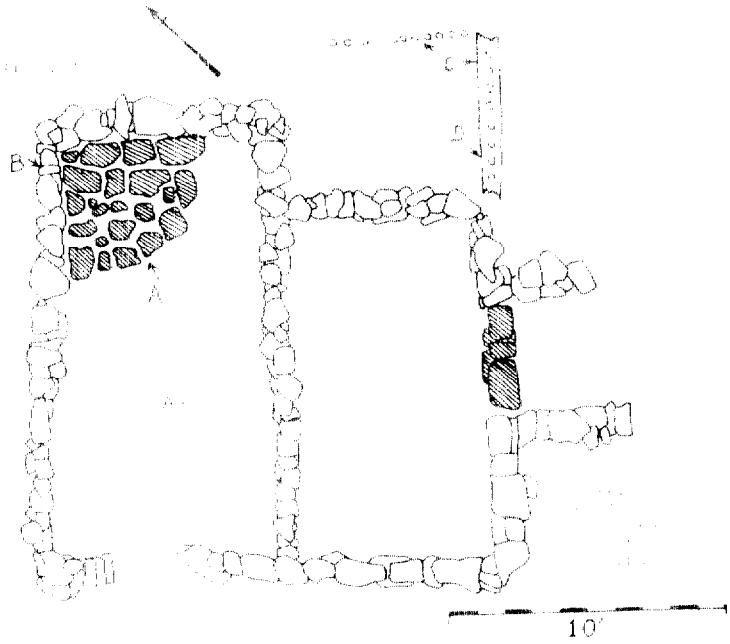

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