UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA, PENNSYLVANIA 19104

Title of Proposal
Information Center: Museum Applied Science Center for Archaeology

Submitted to
National Endowment for the Humanities
Washington, D.C. 20506

October 30, 1970

Principal Investigator: Froelich Rainey

Position: Director, University Museum

School: Graduate School of Arts & Sciences

Department: University Museum

Starting Date: March, 1971

Duration: 2 years

FUNDS REQUESTED

$18,625

Corporate Name of University: THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA
(A Pennsylvania non-profit corporation)

Contracting Office: OFFICE OF RESEARCH ADMINISTRATION
3451 Walnut St., Philadelphia, Penna. 1910

Date:_____

Approved:_____
John Hobstetter, V. Provost for Research

Approved:_____
Froelich Rainey, Principal Investigator
Director, University Museum

_____
William E. Stephens, Dean of the College

Information Center: Museum Applied Science Center for Archaeology

The trend in archaeology over the last two decades has been toward the development and application of scientific techniques to field and laboratory research and toward a more quantitative interpretation of data. Researchers have moved from exhaustive description and stylistic classification of artifacts to systematic and reproducible chemical analyses which furnish information as to source and distribution of artifacts and clues as to the technology involved in their making. Emphasis has been placed on establishing precise chronologies based on reliable dating techniques, and upon the development of more efficient and comprehensive methods of archaeological prospecting. With a view toward providing the archaeologist with a systematic compilation of the tools only recently made available to him by the physical sciences, an information center was established at the Museum Applied Science Center for Archaeology in 1961.

MASCA's Information Center maintains a cumulative reference file dealing with scientific techniques that have, or might have, a special application for the study of archaeology. This file contains information gathered from an intensive survey of relevant literature published since 1955. A partial list of the periodicals read regularly by the Information Center Staff is attached. (See Appendix I). Its diversity bears witness to the multiplicity of

sciences which have contributed significantly to archaelogical investigation.

Publications are scanned for articles (or references to articles and books) which deal with the following broad subject areas:

I. METHODS OF DATING: Techniques which embrace a variety of approaches to the problem of establishing a chronology of human events. (radiocarbon, thermoluminescence, fission track, obsidian hydration, dendrochronology).

II. METHODS OF ARCHAELOGICAL PROSPECTING: Land, under-water, and aerial survey techniques which accelerate the discovery of new archaeological sites and the excavation of established sites. (Magnetometer and resistivity surveys, side-scanning sonar, aerial photography, etc.).

III. ANALYTICAL TECHNIQUES: Methods by which archaeological artifacts are submitted to the scrutiny of detailed laboratory studies to solve problems of origin and technology as well as to aid in

their successful conservation and restoration.

IV. METHODS OF ENVIRONMENTAL ARCHAEOLOGY: Techniques which enable the study of the parameters of the paleoenvironment to establish the context in which man and his culture evolved. (Paleobotany, Climatology, Paleoecology).

V. INTERPRETATION OF DATA: Statistical treatments of archaeological materials.

Articles dealing with these areas are abstracted and filed under the appropriate category or categories in the subject index. Articles are also referenced by author. An alphabetical listing of the categories included in the subject index of the techniques file is attached. (See Appendix II).

Since the laboratories of MASCA are particularly concerned with dating techniques (radiocarbon and thermoluminescence) and with methods of archaeological prospecting, information regarding these areas has been supplemented with field reports and photographs of instrument surveys and experimental data provided by staff investigators.

The Information Center files are available to any interested person and are used most often by the MASCA research staff, professors and students of the University Museum and the University

Pennsylvania and by visiting researchers.

In February 1965, the Information Center issued its first newsletter dealing with new field and laboratory techniques applicable to the study of archaeology. The newsletter appears bi-annually and is now in its sixth year of publication. The newsletter is produced at minimal cost and is distributed free of charge. Copies of the most recent issues are attached.

The newsletter mailing list numbers 1500 and includes libraries, museums, universities and research institutions as well as individual subscribers. The distribution of both subscribers and contributors is international. The newsletter has provided an effective and stimulating flow of information between our center and laboratories conducting related research all over the world. Information contained in it is being used by classical archaeologists, orientalists, Egyptologists, prehistorians, and many others.

The costs of operation of the Information Center have been borne in full by the University Museum since the center's inception in 1961. In the last ten years the responsibilities of the Information Center have increased in direct proportion to the rapid development of technologies found to have application in archaeological research. It is not surprising that in the same ten years, the museum as a whole has experienced increasingly

heavy demands on its budget from expansion of wide-ranging research projects, and currently, from construction costs of a new wing. For these reasons, it has become necessary to seek outside financial assistance for continued operation of the Information Center and it is hoped that this can be provided in part by NEH.

The use of applied sciences in archaeology has vastly affected man's time perspective and traditional concepts of human history. A more precise picture is emerging of what happened in history and why, and of man's changing relationship to his environment and his advance toward a more successful interaction with it or toward a relationship which leaves the future of the species in doubt. The last two decades have produced many new techniques for archaeological dating as well as refinements and improvements in old methods. Dendrochronological calibration of the radiocarbon time scale has had serious effects on relative as well as absolute chronology in many areas. For example, while the new calibration serves to confirm the historical chronology in Egypt and the Near East, it radically transforms the now conventional radiocarbon chronology of prehistoric Europe. It now appears, for instance, that the temples of Malta and many of the megalithic monuments of Western and Northern Europe are earlier than the Pyramids and that metallurgy may have originated in the Balkans earlier than in the Aegean.

The archaeologist must keep pace with the accelerated events which have revolutionized the methodology of his field of research. Insofar as the Information Center at MASCA has made and continues to make the investigator aware of the resources available to him, it performs a service that is essential to the effective operation of the University Museum research staff.

APPENDIX I

PERIODICALS

American Anthropologist

American Antiquity

American Journal of Archaeology

American Journal of Science

American Numismatic Society, New York

American Scientist

American Society for Metals, Review of Metal Literature

Annals of the New York Academy of Science

Antiquaries Journal

Antiquity

Archaeological Journal

Archaeological Newsletter

Archaeology

Archaeometry

Archeologia

Art and Archaeology Technical Abstracts

Bulletin de correspondance hellenique

Canadian Geographical Journal

Chemical Abstracts

Council for Old World Archaeology, Bibliographies and Surveys

Curator

Current Anthropology

Current Archaeology

Earth & Planetary Science Letters

EOS Transactions

Expedition

Geochimica et Cosmochimica Acta

Geoexploration

Geographical Review

Geological Society of America, Bulletin

Geophysical Abstracts

Geophysics

Hesperia

Institute of Archaeology, University of London, Bulletin

International Council of Museums, News

International Institute for Conservation, Abstracts and News

Journal of Geophysical Research

Journal of Glass Studies

Journal of Near Eastern Studies

Journal of the Iron and Steel Instute

Journal of the Society of Glass Technology

Metallurgical Abstracts

Museum

Museums Journal

Nature

The Physical Review

Physical Review Letters

Physics Abstracts

Proceedings of the Prehistoric Society

Review of Scientific Instruments

Revue Archéologique

Science

Science Abstracts

Scientific American

Southwestern Lore

Southwestern Journal of Anthropology

Studies in Conservation

Textile Research Journal

The United States National Museum, Annual Reports

World Archaeology

Appendix II: Subject Index

Patination

Petrographic Studies

Photography and Photogrammetry-Information

Physical Anthropology

Pigments-Information

Pollen Dating-Analysis

Potassium-Argon Dating

Radiocarbon

Radiocarbon Laboratory Methods

Radiographic Measurements

Radiological Methods-Techniques of Dating

Resistivity Surveying

Seismic Studies

Shell Analysis Information

Soil Analyses

Sonar

Sonic

Spectrometer, Mass

Spectrometry-Analyses

Statistical Treatments

Stratigraphical Studies

Textile Studies-Analyses

Thermoluminescence

Trace Element Analyses

Tritium Dating

Ultrasonic Measurements

Underwater Archaeology

Varve Analysis-Information

Wood Identification-Analysis

Budget - First Year (1971-72)

	Proposed NEH Funds	University Contribution	Total Project Funds
A. Salaries			
1. Froelich Rainey Principal Investigator 10% of full-time: 12 months FTE - 1 man month		2850	2850
2. Elizabeth K. Ralph Faculty Associate 10% of full-time: 12 months FTE - 1 man month		1470	1470
3. Francesca Giegengack Research Assistant Full-time: 12 months FTE - 12 months	6000		6000
Total Salaries	6000	4320	10,320
Employee Benefits (10.2% of Salaries)	612	441	1053
Overhead (34% of Salaries)	2040	1469	3509
Sub-Total	8652	6230	14,882
B. Operation Costs			
Office Supplies	100		100
Postage, Duplicating fees	200		200
Publication of MASCA Newsletter		500	500
Total: First Year	8952	6730	15,682

Budget - Second Year (1972-73)

	Proposed NEH Funds	University Contribution	Total Project Funds
A. Salaries			
1. Froelich Rainey Principal Investigator 10% of full-time: 12 months FTE - 1 man month		3080	3080
2. Elizabeth K. Ralph Faculty Associate 10% of full-time: 12 months FTE - 1 man month		1580	1580
3. Francesca Giegengack Research Assistant Full-time: 12 months FTE - 12 months	6500		6500
Total Salaries	6500	4660	11,160
Employee Benefits (10.2%)	663	475	1138
Overhead (34%)	2210	1584	3794
Sub-Total	9373	6719	16,092
B. Operation Costs			
Office Supplies	100		100
Postage, Duplicating fees	200		200
Publication of MASCA Newsletter		600	600
Total: Second Year	9673	7319	16,992

	Proposed NEH funds	University Contribution	Total Project Funds
Total: First Year	8952	6730	15,682
Total: Second Year	9673	7319	16,992
Total: Two Years	18,625	14,049	32,674

NATIONAL ENDOWMENT FOR THE HUMANITIES

WASHINGTON, D.C. 20506

H-5197

December 2, 1970

Dr. Froelich Rainey
Director, University Museum
University of Pennsylvania
Philadelphia, Pennsylvania 19104

Dear Dr. Rainey:

I write in regard to your research grant application entitled Information Center: Museum Applied Science Center for Archaeology.

Your application is currently being reviewed and will shortly be submitted for opinions and recommendations by a number of established scholars in your field. Unless you hear from us to the contrary you may assume that it will be acted upon at the next meeting of the National Council on the Humanities and that you will be hearing from us on or about the 1st of March.

Very sincerely yours,

William R Emerson

William R. Emerson
Director, Division of
Research and Publication

cc: Dr. D. J. O'Kane
Mr. John Hobstetter