

January 21, 1971

Mr. Reagan A. Scurlock, Director  
Office of Research Administration  
4th Floor, Franklin Building

Dear Mr. Scurlock:

Twenty-two copies of a grant proposal entitled "Museum Applied Science Center for Archaeology" are attached.

Dr. Rainey (the principal investigator) and I will appreciate it if you will send copies of the proposal to:

Dr. Murray Aborn, Program Director  
Special Products Division  
National Science Foundation  
Washington, D. C. 20550

Dr. Aborn has read a preliminary draft of this proposal and is expecting to receive these copies by the end of January.

Sincerely yours,

Elizabeth K. Ralph

EKR/ek

202-632-4216

949-0890

home

October 25, 1971

Dr. Murray Aborn, Program Director  
Special Products Division  
National Science Foundation  
Washington, D.C. 20550

Dear Dr. Aborn:

Fro Rainey and I have prepared the enclosed draft of information concerning the present and possible future activities of our Applied Science Center for Archaeology (MASCA). We had intended it to be much briefer than it is, and we apologize for its length. The budget, presented on the last pages is extremely tentative, and will depend, of course, upon what activities and total sum you would like to support.

I am sending it to you in haste with the hope that we may discuss the MASCA program during your visit here on October 29th.

Sincerely yours,

Elizabeth K. Ralph

EKR:sj

cc: Dr. John B. Cornell, Program Director  
Division of Anthropology

P.S. Since writing this, Dr. Rainey has suggested that we meet in the Museum at 9:00 A.M., Saturday, October 30th.

February 16, 1972

Dr. Murray Aborn, Program Director  
Special Projects Division  
National Science Foundation  
Washington, D. C. 20550

Dear Dr. Aborn:

Submitted herewith are twenty (20) copies of proposal for research support entitled "Museum Applied Science Center for Archaeology (MASCA)," under the direction of Dr. Froelich Rainey, Director, University Museum and MASCA Administrator.

The proposal has been approved by appropriate University officials and signed on behalf of the University by Mr. Martin Meyerson, President.

The University agrees to cost share on this proposal in accordance with current National Science Foundation policy.

Should you require additional information, please do not hesitate to communicate with us.

Sincerely,

Joel E. Kinley  
Contracts Administrator

JK:vm  
encl.

cc: Dr. Rainey  
Prof. Ralph ✓  
Dr. Caspari  
Dean O'Kane  
Dean Stephens

July 17, 1972

Mr. Joel Kinley  
Office of Research Administration  
4th Floor, Franklin Building

Dear Mr. Kinley:

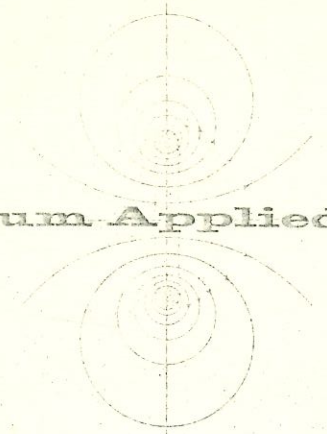
In regard to our grant proposal entitled "Museum Applied Science Center for Archaeology," Dr. Murray Aborn, Dr. John Cornell, and Mrs. Green (all from the NSF) visited us on Friday, July 14. As a result of the discussions which took place, Dr. Aborn has requested that we send him the enclosed letter.

I shall appreciate it if you will process it and send it on.

Sincerely yours,

EKR/pb  
Encl.

Elizabeth K. Ralph



**Museum Applied Science Center for Archaeology**

Froelich Rainey, Director

Elizabeth K. Ralph, Associate Director

THE UNIVERSITY MUSEUM • UNIVERSITY OF PENNSYLVANIA  
33rd & SPRUCE STREETS • PHILADELPHIA, PENNSYLVANIA 19104  
386-7400 (Area Code 215) Cable Address "Antique"

July 17, 1972

Dr. Murray Aborn, Program Director  
Special Projects Division  
National Science Foundation  
Washington, D. C. 20550

Dear Dr. Aborn:

In regard to our proposal No. P2S1039-000 entitled "Museum Applied Science Center for Archaeology," we are at this time requesting a change in the duration of the budget. Instead of \$253,564 for two years, we are asking for approximately \$750,000 for five years.

The specific budget for the first year is \$143,664, and we anticipate that the level of spending will be close to this amount for the subsequent four years (for which we shall submit specific budgets each year).

In our proposal, the budgets for the first two years are listed on pages 97 to 106 and those for the subsequent three to five years, on pages 60A to 60E.

We should like to change the listing of the radiological consultant, Dr. N. Suntharalingam (pages 102 and 106) to state that he be paid the equivalent of one summer month.

Sincerely yours,

FR:pb

Froelich Rainey

July 20, 1972

Dr. Murray Aborn, Program Director  
Special Projects Division  
National Science Foundation  
1800 "G" Street, N.W.  
Washington, D. C. 20550

Re: Proposal No. F281039-000  
"Museum Applied Science  
Center for Archaeology"

Dear Dr. Aborn:

Enclosed herewith is a letter from Dr. Froelich Rainey requesting a change in the duration of the budget for the above project. Also noted are specific points pertaining to the budget.

The letter has been approved and signed on behalf of the University by Mr. Reagan A. Scurlock, Director, Research Administration.

If I can furnish any additional information, please do not hesitate to contact me.

Sincerely,

Joel E. Kinley  
Contracts Administrator

JEK:vm  
encl.

cc: Dr. F. Rainey  
Dr. E. K. Ralph ✓

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

NOV 21 1972

Dr. Froelich Rainey  
University Museum and  
Department of Anthropology  
University of Pennsylvania  
Philadelphia, Pennsylvania 19104

Dear Dr. Rainey:

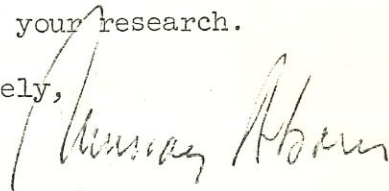
I am pleased to inform you that the National Science Foundation is able to support your research proposal.

The enclosed materials provide information on the conditions of the grant and our administrative requirements. These are important: please review them carefully.

If you have any questions now, or during the course of the grant, do not hesitate to get in touch with us.

We wish you the best of success with your research.

Sincerely,



Murray Aborn  
Program Director for  
Special Projects

Enclosures

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

NOV 21 1972

Mr. Reagan A. Scurlock, Director  
Office of Research Administration  
University of Pennsylvania  
Philadelphia, Pennsylvania 19104

Grant GS-36308X  
Proposal No. P2S1039

Dear Mr. Scurlock:

It is a pleasure to inform you that \$139,400 is granted to the University of Pennsylvania for support of the project entitled "Applied Science Center for Archaeology" for one year in accordance with the attached budget summary. This project is under the direction of Froelich Rainey, University Museum.


This project, as outlined in the above-numbered proposal, has been approved scientifically for a period of two years. If the conditions of Important Notice No. 33, dated December 18, 1970, are met, it is our intention to continue support beyond the first year at approximately the following level:

2nd year \$109,900

This grant is effective November 15, 1972. Approximately nine months from then, the Foundation should receive the request for continued support prescribed by NSF Important Notice No. 33. The statement of funds estimated to remain uncommitted, required by that Notice, should be as of the anniversary date of the grant. Unless such a request is received in a timely manner, this grant will expire on April 30, 1974.

The provisions of Enclosures R-12 and A-2 are applicable to this grant.

Sincerely yours,

  
Wilbur W. Bolton, Jr.  
Grants Officer

Enclosures

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

December 5, 1972

Ralph -  
ASCA

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

Dear Fro:

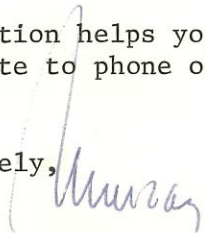
I too was pleased to see the announcement making the Applied Science Center grant official. Sorry the affair stretched out over so many months; we hope to do better in the future.

Speaking of the future, we certainly do have in mind supporting the Center for longer than two years. We expect that you will apply for renewed support in about twenty months -- at which time we will re-review your request for years 3 - 5 in light of our budgetary anticipations for the corresponding fiscal years. We could not commit ourselves to a five-year term of support now, however, partly because good management practice places constraints on the number of continuing obligations one has on the books at any given time, and partly because it is extremely difficult to make accurate projections of project costs that many years ahead -- at least under today's economic situation.

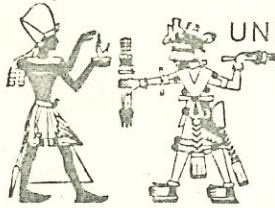
In other words, we can't promise to support the Center for more than two years at the present time. And though we hope to provide it with further support in future years, we can't commit ourselves to any particular level. We trust that you will continue to seek funds from other sources to help support the full range of Center activities, and that you will keep us informed of progress in this area as well as in all areas related to the Center's research program. In about eighteen months, we will be glad to discuss the shape of a renewal request with you -- leaving ample time for the submission and review of a proposal before the second year of your current grant expires.

I hope that this more detailed information helps you with your plans. Please keep in touch and do not hesitate to phone or write anytime a question arises.

Sincerely,

  
Murray Aborn  
Program Director  
for Special Projects

# THE UNIVERSITY MUSEUM



UNIVERSITY OF PENNSYLVANIA  
THIRTY-THIRD AND SPRUCE STREETS  
PHILADELPHIA, PA. 19104

CABLE ADDRESS "ANTIQUE"  
TELEPHONE: EVERGREEN 6-7400  
(AREA CODE 215)

September 13, 1973

Dear Dr. Aborn:

Our Office of Research Administration has sent you our nine-month report for the MASCA Grant No. GS-36308X. The report contains item Nos. 1, 2, and 3 as specified by NSF notice No. 33.

Mr. Kinny's accompanying letter has just reached my desk, and I find that he has referred to item No. 3 (second-year budget) as a "revised" budget. The budget, in fact, has not been revised, but remains the same as submitted in the original proposal. By not changing the budget, we obtained approval to continue with the 37% overhead instead of the new very much higher rate.

On the more human side of our activities in MASCA I think you would enjoy hearing about the bind we are in in connection with the Julsrud figurines from Mexico. As I think I wrote you, we are getting thermoluminescence dates on these things of about 2,600 B.C. but all the archaeologists think they are fakes. This has brought up the question as to whether the degree of firing may explain the problem, but Gary's last experiments seem to indicate that 300° is sufficient and, if so, the things must be authentic. Knowing me, you can imagine that I would be delighted to prove that these things are authentic and dumbfound the archaeologists, but we certainly have to be cautious.

Also, on the more human side, after making a documentary television program in the Southwest for public service television I arranged with the Park Service to make a number of tests on preserving mud brick and we've had one of our people from MASCA out there spraying mud walls all over the place. I think we might have something here, also I might add, that the cesium magnetometer finally seems to be catching on. We even have a possibility of demonstrating it in Red China if this does not create any security problems for the National Science Foundation. Anyway, we are negotiating so you see things get on.

All the best,

Froelich Rainey  
Director

MASCA  
Beth Phelps

NATIONAL SCIENCE FOUNDATION  
WASHINGTON, D. C. 20550

OCT 17 1973

Mr. Reagan A. Scurlock, Director  
Office of Research Administration  
University of Pennsylvania  
Philadelphia, Pennsylvania 19104

Grant GS-36308X1  
Request No. P4S0237

Dear Mr. Scurlock:

It is a pleasure to inform you that \$109,900 is granted to the University of Pennsylvania for continued support of the project entitled "Applied Science Center for Archaeology" for an additional year in accordance with the attached budget summary. Funds awarded under this grant, as amended, now total \$249,300. This project is under the direction of Froelich Rainey, University Museum.

This grant will expire on April 30, 1975.

Except as modified by this amendment, the grant conditions remain unchanged.

Sincerely yours,

Wilbur W. Bolton, Jr.  
Grants Officer

Enclosure

PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR COPY

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

OCT 17 1973

*Beeth Ralph  
Does this mean  
the Univ. gets  
a bigger  
take?  
Fro*

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

Dear Fro:

I enclose Mr. Bolton's letter informing you of Amendment No. 1  
to Grant GS-36308X.

Sincerely yours,

*Murray Aborn*

*Dr.*

Murray Aborn  
Program Director for  
Special Projects

*Division of Social Sciences?*

NATIONAL SCIENCE FOUNDATION  
WASHINGTON, D. C. 20550

OCT 17 1973

Mr. Reagan A. Scurlock, Director  
Office of Research Administration  
University of Pennsylvania  
Philadelphia, Pennsylvania 19104

Grant GS-36308X1  
Request No. P4S0237

Dear Mr. Scurlock:

It is a pleasure to inform you that \$109,900 is granted to the University of Pennsylvania for continued support of the project entitled "Applied Science Center for Archaeology" for an additional year in accordance with the attached budget summary. Funds awarded under this grant, as amended, now total \$249,300. This project is under the direction of Froelich Rainey, University Museum.

This grant will expire on April 30, 1975.

Except as modified by this amendment, the grant conditions remain unchanged.

Sincerely yours,

Wilbur W. Belton, Jr.  
Grants Officer

Enclosure

*UNIVERSITY INTRAMURAL CORRESPONDENCE*  
**MUSEUM**

MEMORANDUM

TO: Professor Robert H. Dyson, Jr., Acting Director, University Museum  
FROM: Dr. Elizabeth K. Ralph, Associate Director, MASCA  
DATE: 2/9/74  
SUBJECT: Oxford Symposium on Archaeometry and Archaeological Prospection

Permission is requested to send Dr. Gary Carriveau to attend the above mentioned symposium at Oxford University from March 20th to 23rd, 1974

Dr. Carriveau has submitted three abstracts of new research on appropriate archaeometric subjects namely:

- 1) 'TL Sensitivity of a High Temperature Peak in Quartz as a Function of X-ray and Alpha Radiation'
- 2) 'Firing Temperature of Pottery; Annealing and its Effect on TL Dating'
- 3) 'The MASCA Metal Slag Dating Project'

In the second year of NSF Grant GS 36308X1, we have adequate funds (\$2,200) for foreign travel, but we are required to obtain prior approval from the NSF to use the funds. With your permission we shall request this approval.

February 16, 1974

Dr. Murray Aborn  
Program Director for Special Products  
Division of Sciences  
National Science Foundation  
Washington, D.C. 20550

Dear Dr. Aborn:

Fro Rainey and I are grateful for the inclusion of funds for foreign travel in the second year of NSF Grant GS-36308XI (and for the grant, too).

We should like to send Dr. Gary Carriveau (our new physicist, who is supported by the grant) to attend the 1974 Symposium on Archaeometry and Archaeological Prospection from March 20th to 23rd at Oxford University. Dr. Carriveau has been working on a variety of new projects in our MASCA labs. He has submitted abstracts of new research on the following subjects:

- 1)
- 2)
- 3)

The cost of his trip is anticipated to be about \$600.

We feel that it is important for MASCA to be represented at this symposium in Oxford, and, especially, this year when we have results of several new research projects to report. Therefore, we are writing to ask for your approval.

We hope that you will have time to visit us this year so that we can tell you more about our activities and express our appreciation for the grant. I suppose that it is almost time to write a new grant proposal. If there is a particular deadline that we should meet, I shall appreciate it if you will let me know.

Sincerely yours,

Elizabeth K. Ralph

EKR/ek

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

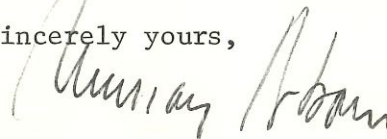
March 15, 1974

Dr. Elizabeth K. Ralph  
The University Museum  
33rd and Spruce Streets  
University of Pennsylvania  
Philadelphia, Pennsylvania 19104

Dear Dr. Ralph:

This is to inform you that, in accordance with your request of February 16, you may use up to \$1,000 from Grant GS-36308X1 in connection with the travel of Dr. Gary Carriveau to the 1974 Symposium on Archaeometry and Archaeological Prospection, to be held at Oxford University in England. American carriers are to be used, and the expenditure of funds should be in conformance with the established practice of your university.

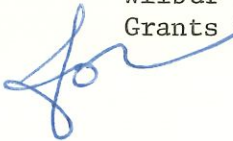
Sincerely yours,



Murray Aborn  
Program Director for  
Special Projects

*William K. Sprague*

Wilbur W. Bolton, Jr.  
Grants Officer



\*in accordance with  
attached paragraph  
from "NSF Grant  
Administration Manual"  
dated Oct, 1973

*WKS*

**223 Use of United States-Flag carriers, Unless prior NSF approval is obtained, U.S.-flag air or surface carriers must be used for foreign travel supported by an NSF award, as follows:**

**a. When a U.S.-flag carrier provides regularly scheduled service between points of travel, this service must be used unless:**

**(1) Travel by a U.S.-flag carrier could not be performed in time to carry out the purposes of the travel or;**

**(2) The traveler would be detained over six hours at any interchange point enroute awaiting a U.S.-flag carrier or;**

**(3) Payment is to be made in Special Foreign Currency and no U.S.-flag carrier serving the points of travel will accept the currency or the NSF Office of International Programs determines that it would be in the best interests of the Foundation to utilize a carrier of the SFC country.**

**b. When no U.S.-flag carrier provides regularly scheduled service between points of travel, a foreign flag carrier may be used to the nearest practicable interchange point to connect with a U.S.-flag carrier.**

**c. A foreign train, bus, or other surface carrier may be used in lieu of or as a supplement to air travel at the lowest first-class rate by the transportation facility used. However, if such travel could have been performed by air, the allowance will not normally exceed that for jet economy air accommodations. The grantee will document for its records the reason for use of non-U.S.-flag carriers.**

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

August 12, 1974

Ralph  
ASCA

Dr. Froelich Rainey  
Director  
The University Museum  
University of Pennsylvania  
Philadelphia, Pennsylvania 19174

Dear Fro:

Thank you for clarifying your status in relation to MASCA with the appointment of Otto Haas. Thanks also for the brief report on recent findings in Thailand using MASCA-developed techniques. I have added your July 17 letter to our records pertaining to the current MASCA grant.

Best regards.

Sincerely yours,



Murray Aborn  
Program Director for  
Special Projects

GS-36309X

October 15th, 1974

Dr. Murray Aborn  
Program Director for  
Special Projects  
National Science Foundation  
Washington, D.C. 20550

Dear Dr. Aborn,

Since I have a question concerning our current grant, GS-36308X (MASCA), I thought that you might prefer that I write a separate letter.

In the Travel category, we have overspent the domestic budget, but have \$1,349 remaining for foreign travel. Could we have permission to transfer this amount to Domestic Travel?

We are planning to do a magnetometer survey in Egypt this winter, but costs for this will be supported by the Deutsches Archäologisches Institut. For various reasons our plans for work this fall in Greece and Iran were cancelled.

Sincerely yours,

Elizabeth K. Ralph

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

October 30, 1974

Dr. Elizabeth K. Ralph  
Museum Applied Science Center  
for Archaeology  
University of Pennsylvania  
Philadelphia, Pennsylvania 19174

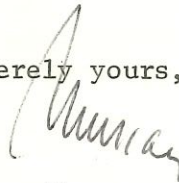
Dear ~~Elizabeth:~~ *both -*

We have no objection to your shifting unexpended international travel funds into the domestic travel category. The question of unexpended travel funds brings up a matter of more general concern, however.

This is a very bad year financially speaking, and I think you should take seriously the possibility that we may not be able to continue our support of MASCA beyond the term of the current grant. If your renewal proposal were to be declined, it might change your present priorities for utilizing funds remaining in the current grant.

I dislike having to caution you in this way, but the fact is that general-support type grants are apt to get hardest hit in a budgetary crunch.

Sincerely yours,



Murray Aborn  
Program Director for  
Special Projects

# UNIVERSITY of PENNSYLVANIA

PHILADELPHIA 19174

The College

February 6, 1975

DEPARTMENT OF PHYSICS

Dr. Murray Aborn  
Program Director for Special Projects  
Division of Social Sciences  
National Science Foundation  
Washington, D.C. 20550

Dear Dr. Aborn:

Thank you for your telephone call and for your advice in regard to the revision of the budget for the MASCA grant proposal. Five copies are being mailed to you as well as a revised cover page.

In regard to specific requests our answers are as follows:

- 1) Froelich Rainey will resume his Directorship of MASCA.
- 2) William E. Stephens, Professor of Physics, has gladly agreed to become an Associate Director of MASCA to guide us in our research. (Incidentally, he has been my advisor and mentor since I first came to U. of Pa. in 1949, and I have the greatest respect for him as a person as well as for his ability).

Also, at the start of the spring term (January 2, 1975), Jeffrey Klein, an intelligent and capable graduate student in Physics, joined our group. With his know-how in electronics and Physics in general, he will be a good one to work jointly with Bill Stephens in conducting experiments.

- 3) We have listed Dr. Haas as Associate Director for Development. He will be instrumental in obtaining support for MASCA in the future.
- 4) We have instructed everyone and written notes to ourselves in every laboratory to be sure to acknowledge the NSF (with proper division and grant number) in all of our publications.

We apologize for being remiss in this respect, and promise to do our best so that this will not occur again.

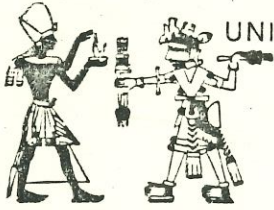
Sincerely yours,

*Elizabeth K. Ralph*

Elizabeth K. Ralph

ER/ct

# THE UNIVERSITY MUSEUM



UNIVERSITY OF PENNSYLVANIA

THIRTY-THIRD AND SPRUCE STREETS  
PHILADELPHIA, PA. 19174

CABLE ADDRESS "ANTIQUE"  
TELEPHONE: EVERGREEN 6-7400  
(AREA CODE 215)

April 24, 1975

Dr. Murray Aborn  
Program Director, Special Projects  
Social Science Division  
National Science Foundation  
Washington, D. C. 20550

Dear Murray:

Enclosed is the final report for the period ending April 30th. I just wanted to say that I am back in the harness as Director of MASCA, and that Otto Haas and I have our heads together trying to figure out the best approach to industry. The experiments in mud-brick preservation and construction are arranged for this summer in Iran. We are alerting the Rohm-Haas plant in Iran about this experiment, hoping that it will be as useful to them in business as it will be to us in archaeology, and that we can make some deal. Also, as you can see, we will be working with the Stanford Research Institute beginning in May, so there is something under-way, in any case, in that new direction.

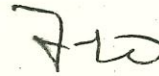
I think I told you that the Carbon-14 analyses are bearing out the claims on very ancient bronze in the Far East, as first determined by thermoluminescence. I don't think I can find any one single example of the significance of this new technique in archaeology more impressive than this revolutionary discovery in the Far East. It is a direct result of our thermoluminescent development here.

One thing that continues to plague us is the difficulty of getting

the newspapers and magazines to acknowledge the National Science Foundation's support to MASCA. I even told the editor of Reader's Digest, that unless he put it back into the Digest article, we stood to lose all financing for MASCA, and still the bastard left it out! I explained to Walter Sullivan, of the New York Times, the problem yesterday, and I'm sure he understands it. We expect him to cover the ground radar-bristlecone pine search in California this coming month.

Anyway, thanks again for making the whole operation possible.

As ever,



Froelich Rainey  
Director

FR/al