8 Alyce Court
Trenton, N.J. 08638
Phone 883;1768

Dr. Elizabeth Ralph
Woosamonsa Rd.
Pennington, N.J.

Dear Dr. Ralph:

I am adjunct Professor of Philosophy and Religion at Glassboro State College and for a number of years I have worked closely with Dr. Velikovsky whom you know well. If it would not inconvenience you I would like to stop by your home some evening for a few minutes and inquire about a few matters in regard to radiocarbon dating. I promise not to take much of your time but it is important.

Sincerely,

Warner Sizemore

Almost any evening except Tuesday would suit me.

COPY

February 22, 1966

Professor Warner Sizemore
8 Alyce Court
Trenton, New Jersey 08638

Dear Professor Sizemore:

About radiocarbon dating, I would be glad to talk to you, but at the moment, my time is not my own. For the rest of this month, I shall be commuting back and forth to Baltimore but don't know ahead of time when I'll be here and when there. In March I am scheduled to leave for Italy.

I have enclosed a few reprints. If you have a specific question that could be answered by phone, my home number is 737-0003, and I should be there some of the evenings this week and next.

Sincerely yours,

EKR:lm

Elizabeth K. Ralph

Enc.

January 31, 1964

Dr. A. Sliepcevic
Institut "Ruder Boskovic
Zagreb
Jugoslavija

Dear Dr. Sliepcevic:

Thank you very much for your New Year card and reprints. Your experiments with impurities in CO_2 are very helpful.

I am wondering if you tried H_2O alone as an impurity. We suspect that H_2O does not affect the plateau curve appreciably, but does lower the counting rate. This is annoying because it makes it harder to detect in samples of unknown age.

Sincerely yours,

Elizabeth K. Ralph

EKR:pc

COPY

November 19, 1962

Prof. Cyril S. Smith
History of Science Department
Massachusetts Institute of Technology
Cambridge, Mass.

Dear Prof. Smith:

It was a great pleasure to have the opportunity of meeting you. Judging from the amount which we learned today, I hope that our close collaboration will begin in the very near future, and that it will be a rewarding experience for you too.

A copy of Archeometry, Vol. 4 is enclosed.

Sincerely yours,

Elizabeth K. Ralph

EKR/deh

Encl.

January 16, 1963

Professor C. S. Smith, 14 N-321
Massachusetts Institute of Technology
77 Massachusetts Ave.
Cambridge 39, Massachusetts

Dear Professor Smith:

Thank you very much for your comments and revisions of the grant proposal, a copy of which is enclosed.

It is on its way to Washington today and we shall hope for its approval.

Sincerely yours,

Elizabeth K. Ralph

EKR:dml

encl.

May 8, 1969

Professor C.S.Smith
Room 14N-321
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139

Dear Professor Smith:

Mark Han and I want to thank you for the reprints of "Matter versus Materials: A Historical View." I have enjoyed rereading your stimulating lecture.

I am very sorry about the delay in sending the photographs which you requested. Unfortunately, these have to be processed through the regular Museum channels. They have now been in the hands of the photographer for over a month, but various emergency jobs for dissertations, etc. have delayed yours. They are now scheduled for next week, but if you do not receive them in two weeks, I suggest that you write to Mrs. Caroline Dosker, Asst. Registrar.

I am leaving tomorrow for Italy and Yugoslavia, but will be back in early July.

With best regards,

Elizabeth K. Ralph

EKR/mrb

SOILTEST, INC.
2205 LEE STREET
EVANSTON, ILL. 60202
SUBSIDIARY OF CENCO INSTRUMENTS CORPORATION • TELEPHONE 312/869-5500 • CABLE: SOILTEST, EVANSTON

June 18, 1964 REFER TO:

Applied Science Center for Achaeology
The University Museum
University of Pennsylvania
33rd & Spruce Streets
Philadelphia 4, Pa.

Re: Terra-Scout Refraction Seismograph;
Training Center

Gentlemen:

Soiltest is opening a special training center in Baraboo, Wisconsin for instruction in use of the R-150 Terra Scout refraction seismograph. The training school is located on Soiltest's one-square mile proving ground near the company's electronics manufacturing plant.

Users of the Terra-Scout (and prospective users) are entitled to attend the training school. The training periods last from two to three days and include classroom work in theory of refraction seismography as well as actual field use and practical application work. Classes are expected to begin in early June 1964 and will continue through the summer and fall.

The Soiltest Proving Ground and Training School is located in a geologically-significant area of Wisconsin. A wide variety of sub-surface conditions and materials are present in the area to provide those attending the training sessions with experience in evaluating soil and rock conditions found in many areas of the United States and other countries.

If you are interested in attending this training program in Baraboo, write for the new brochure (now in preparation) which outlines information about the training school and proving ground.

We call your attention to our special rental program which is outlined in the attached form. Rental units as well as new factory units are carried in stock for immediate shipment.

May we hear from you?

Very truly yours,

SOILTEST INC.

Stephen V. Thompson
Asst. Sales Manager

SVT:

312/869-5500

~~SPaulding 2-6400~~

CABLE ADDRESS SOILTEST, CHICAGO

SOILTEST Incorporated

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SUBSIDIARY - CENCO INSTRUMENTS CORP.

QUOTATION

R-150

DATE Jan. 2, 1964

TO:

Applied Science Center for
Archaeology
The University Museum
University of Pennsylvania
33rd & Spruce Streets
Philadelphia 4, Pennsylvania

Inquiry Letter

Dated Dec. 10, 1963

Gentlemen: Attn: E. K. Ralph, Associate Director

We sincerely appreciate your inquiry as noted above and are pleased to quote as follows:

THESE PRICES ARE:

- [X] As Noted.
- or [ ] FAS, Nearest Port, Export Packed.
- [X] FOB. _____

TERMS:

- [X] Domestic, Net 30 Days *
- [ ] Payment With Order
- [ ] Export, Confirmed Irrevocable Letter of Credit Payable through Chicago or New York Bank.

* Subject to Credit Approval

SOILTEST, INC.

By Stephen V. Thompson

Stephen V. Thompson

THIS QUOTATION IS FIRM FOR A PERIOD OF 30 DAYS

ITEM NO.	QUAN.		MODEL NUMBER	DESCRIPTION	DELIVERY	UNIT PRICE	TOTAL
			R-150	New Model Terra-Scout Seismic Refraction Apparatus. Completely transistorized for durable field per formance, featuring a cathode ray tube for visual observation of first-wave arrivals. Complete observation of seismic waves distinguishes outside noise interferance from controlled wave. Fast and economical method of determining Thickness of material stratas Type and size of material deposits Profile and rippability of rock Elevation and extent of water tables Economics of route locations of pipe lines, roads, etc. Supplied complete and ready to operate Standard equipment components include: -- Instrument receiver, transistorized with cathode ray tube -- Built-in battery and charger -- Digital Read-Out type delay dial all mounted in sturdy super--impact carrying case.			

SOILTEST, INC.

SUBSIDIARY - CENCO INSTRUMENTS CORP.

NAME :
Applied Science Center for
Archaeology
University of Pennsylvania
Philadelphia 4, Pennsylvania

CONTINUATION SHEET

QUOTATION NO. R-150

PAGE NO. 2

ITEM NO.	QUAN.		MODEL NUMBER	DESCRIPTION	DELIVERY	UNIT PRICE	TOTAL
				--- Measuring Tape, 100 --- Instruction Manual & Velocity Charts --- Cathode Ray Tube Shield --- Instrument Legs, Telescoping type, for supporting instrument at eye-level The Terra Scout represents a truly new and unique method of shallow, sub-surface investigation. Main features include: --- Visual observation of first-wave arrivals --- Portability for easy access through rough terrain --- Transistorized for durable and low maintainance operation --- Telescoping leg supports for field set-up at operators eye-level --- Durable and rugged instrument case of super-impact plastic Immediate delivery from stock: FOB CHICAGO		$2490.00	

A rental program is available at the following rates:

Per week (7 days). . . .$120.00
Per month (30 days). . .$270.00

Fifty (50) percent of the first 4 months rental may be applied toward the purchase price.

Mr. Steur or Mrs. Shaul

8:00

Garden State exit rt. 22 W

West on 22, 2.3 miles shopping center, cross overpass Sheffield st. to rt.

CC: Soiltest, Inc.
237 Sheffield Ave.
Mountainside, New Jersey

AD 3-1188

dp

January 7, 1966

Mr. Edward E. Brush
Soiltest, Inc.
2205 Lee Street
Evanston, Ill. 60202

Dear Mr. Brush:

Enclosed are 2 photos and wiring diagram of your TS-BA6 batteries in use with Varian Associates portable precision magnetometer on the plain of Sybaris, November 1965.

I have enclosed also a Newsletter which tells a little about our survey there.

Sincerely yours,

Elizabeth K. Ralph
Associate Director

EKR/rs

January 29, 1975

Dr. Ralph Solecki
Department of Anthropology
Columbia University
New York, N.Y. 10027

Dear Ralph:

Thank you for your reprint about the "Tiger." I enjoyed reading it, and I want to compliment you for making the story so interesting. It was a welcome relief from dull technical articles.

I have enclosed a reprint of our article ain American Scientist in case you would like to have a pretty picture of bristlecone pines.

With best regards,

Beth Ralph

Columbia University in the City of New York | *New York, N.Y. 10027*

DEPARTMENT OF ANTHROPOLOGY Schermerhorn Hall

Nov. 26th (year?)

Dear Dr. Ralph,

I wonder if it would be possible to bring my seminar class in archaeology around to see the labbratory this coming Friday (Dec. 2) ? They are interested in seeing work in progress on methods and techniques in archaeology. I am also writing to Stuckenrath. We should be in Philadelphia about 11 A.M., allowing about two hours from New York. There are about 6-7 students, graduate.

We have been getting the occasional news letter from the Applied Science Center , for which we are thankful.

Very sincerely yours,

Ralph Solecki

Ralph S. Solecki

Prof.

P.S. Bert can tell you about the Alaska project — he will be on it.

Archaeological Technique

Columbia University in the City of New York | New York 27, N. Y.

DEPARTMENT OF ANTHROPOLOGY

May 17, 1961

Dear Fro,

Thanks you for your letter + invitation of May 5th. I waited a bit before replying because I was not sure of my plans for June 1st. It appears now that we shall be in the country at the end of this month thru to June 7th. I am taking a field party up to Alaska on June 8th, to stay north of the Brooks range until about the middle of August.

However, our Research Associate, ~~Bert~~ Bert Salwen, a Ph.D. candidate in archaeology-anthropology, said that if it were O.K. with you, he would sit in for me. We think highly of him, and feel that he can represent us — he has an undergraduate degree in mechanical engineering — so he may even be able to offer constructive criticisms.

I am entirely interested in the use of geophysical instruments and wish I could be there. Please let us know if my alternate representation is alright with you.

Regards,

Sincerely,

Solecki

which he has said before coming into anthropology

January 8, 1963.

Dr. Ralph Solecki,
Dept. of Anthropology,
Columbia University,
New York 27, N. Y.

Dear Dr. Solecki:

Except for my part, I did enjoy your symposium, and appreciated, especially, its good organization.

I have enclosed a copy of my paper and a photograph of the important slide (#9). As you can see in the upper right hand corner, the early Egyptian dynasties are more out-of-line than our general upward trend. Until we can overlap that period, however, with real knowns, nothing definite can be said.

I am in the midst of writing a grant proposal to include a pilot dendrochronological study in Egypt. If approved, we may find out the possibilities for tree-ring dating of the early dynasties.

With best regards,

Elizabeth K. Ralph

EKR:LF

Columbia University in the City of New York | *New York, N.Y. 10027*

DEPARTMENT OF ANTHROPOLOGY Schermerhorn Hall

May 7, 1970

Dr. Elizabeth K. Ralph
Applied Science Center for Archaeology
The University Museum
University of Pennsylvania
33 and Spruce Streets
Philadelphia, Pa. 19104

Dear Elizabeth:

I am sorry that I could not make it to Philadelphia as I had planned.

One of the questions I meant to ask you was if you knew of a reliable metal detector device on the market. One of the people in Lebanon asked me this. I suspect he may be after treasure and probably this is illegal, so I won't get mad if your answer is negative!

Regards,

Ralph Solecki

Ralph Solecki
Professor

RS/vb

May 12, 1970

Professor Ralph Solecki
Department of Anthropology
Columbia University
New York, New York 10027

Dear Professor Solecki:

There are a number of metal detectors available that are all pretty much alike. The one with which we are most familiar is Type T-20 made by the Fisher Research Laboratory, Inc., 1975 University Avenue, Palo Alto, California. A few years ago it cost $128.50.

There is also a much less expensive and less rugged one called a Transistorized Treasure Probe. It is sold by Taylor Gifts, 211 Conestoga Road, Wayne, Pa. 19087. It is their catalog number 382 and costs $19.95. I should imagine that Abercrombie and Fitch has one for sale, but probably more expensive.

I hope that you will find another reason to come to Philadelphia and to visit us.

Sincerely yours,

Elizabeth K. Ralph

EKR/mm

WILSON COLLEGE

SOLOMONIDOU

January 25, 1963

Dear Miss Rolph,

I was informed by Mrs. Jules Lavin that you know of a position available this summer in the carbon 14 department at the University of Pennsylvania for a Physics major. I am very much interested in applying for this job.

My name is Christina Solomonidou, I was born and educated in Athens, Greece. I am now attending Wilson College. This year I am a Junior, and I am majoring in Physics. I know how to type, and I have a reading knowledge of German.

Would you please consider my application?

I am eager to hear from you.

You may notify me at the following address:

Christina Solomonidou
Wilson College
Chambersburg, Penna.

Sincerely yours,

Christina Solomonidou

February 7, 1963

COPY

Miss Christina Solomonidou
Wilson College
Chambersburg, Pa.

Dear Miss Solomonidou:

In regard to a position in our carbon-14 laboratory, I am sorry to say that we do not anticipate that we will have an opening this summer. When possible, we prefer to train new people on a part-time basis during the academic year so that they will know how to do the work during the summer when some of us are away or on field trips and vacations.

I plan to leave for Italy on March 13th, but would be glad to talk to you and show you our laboratory before then if you happen to be in Philadelphia. If it is more convenient for you to visit us later, please arrange the visit with Mr. Robert Stuckenrath, Associate Director.

Sincerely yours,

Elizabeth K. Ralph

EKR:pc

Federico A. Solórzano

CASA:
HIDALGO NO 1995
TEL. 15-09-14

OFICINA:
PEDRO MORENO NO 1278
TELS. 25-05-29 Y 25-39-13

GUADALAJARA, JAL.

November 6, 1970

Dear Dr. Solorzano:

When I saw you in San Bernardino I was not sure just when our party would be arriving in Guadalajara. Now after returning to the office, I find that all has been arranged to have us arriving in Guadalajara on the seventh of January, or perhaps the eighth. With me will be Miss Elizabeth Ralph, the physicist and Bruce Bevan, another one of our people in the Applied Science Center. They will stay on to do the instrument survey but I will be there only 2-3 days and then expect to go on to lower California. We have advised Betty Bell of this and I am also writing Lorenzo about our time of arrival. We may come down from San Antonio to Guadalajara by plane, or via Mexico City.

It was a great pleasure to meet you in California and I look forward to renewing our acquaintenance. This may turn out to be an extraordinarily interesting experiment with the instruments and I hope so because if it is a success, it will be a great help in Mexican archaeology.

All best wishes,

Froelich Rainey
Director

Dr. Federico A. Solorzano
Pedro Moreno No. 1278
Guadalajara, MEXICO

FEDERICO A. SOLORZANO
PEDRO MORENO [redacted] 1278
GUADALAJARA, JAL.

November 18 1970.

Dr. Froelich Rainey.
Director of The University Museum.
University of Pennsylvania.
Thirty-third and Spruce Streets.
Philadelphia, Pa. 19104.
U. S. A.

Dear Dr. Rainey:

It was a pleasure to receive your letter of November 6 1970, in which you advise me of the arrival of yourself, Miss Elizabeth Ralph and Mr. Bruce Bevan on January 7 or 8, 1971 for the purpose of doing an instrument survey.

If you call me by telephone, upon your arrival, I will be most happy to help out in any way possible. Meanwhile, I have obtained Arq. Betty Bell's address;

"El Ojo de Agua" Colón Nº 36, or
Apartado Postal Nº 84, Ajijic, Jalisco, México.

If you so desire, I'll be pleased to take you personally.

I hope your experiments with the new instruments is successful, especially since you indicate that its success could be helpful in Mexican Archaeology.

For me, it was a pleasure and a distinction to meet you during our stay at San Bernardino and I hope to have the pleasure of being of service to you during your stay in Guadalajara.

Most sincerely

F. A. Solorzano

June 23, 1977

Professor John L. Sorenson
Brigham Young University
College of General Studies
Department of University Studies
380 KMH-W,
Provo, Utah 84602

Dear Professor Sorenson:

Froelich Rainey has asked me to reply to your letter of June 15th. We both want to thank you for sending your summaries of "Meso-american C-14 Dates Revised."

We appreciate your thorough work, and we plan to have your tables available in our information center for use by students and faculty.

Sincerely yours,

Elizabeth K. Ralph

UNIVERSITY OF DELAWARE
NEWARK, DELAWARE
19711

309 OLD COLLEGE
PHONE: 302-738-2479

SPARKS ✓

September 18, 1974

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

Dear Elizabeth:

This letter will confirm our conversation last week where I talked with you about the possibility of bringing the students in our art conservation program to your labs on Wednesday afternoon, November 20th, to learn about C-14 and chemthermoluminescence dating. There would be a total of seven students in the group plus myself and possibly Dr. George Reilly, the museum chemist at Winterthur.

All of the students have science backgrounds up to and including physical chemistry. They will also have been taking a materials science course this fall at the University. With this in mind, I think the level of presentation could be pitched a little higher than you would for a group of art historians. If possible, I would appreciate a lecture on each technique pointing out the theory behind the method, indicating the type of data one gets and how the calculation is made. After the lecture, a trip to the lab to see the measurement being made would be most beneficial. I was wondering with the chemthermoluminescence procedure if it might be possible for the students to run a sample and then go through a calculation taking back with them a copy of the x-y plot. I will have them do some preliminary reading on each technique before we visit.

I have enclosed a brochure describing the program which may be of interest to you and your colleagues. As you can see, archaeological conservation is a major area in our program. Your cooperation is very much appreciated.

Please call me if any conflicts develop on your side in the meantime. I will look forward to seeing you about 1:30 p.m. on the 20th.

Very truly yours,

Peter G. Sparks
Director

1
Enc.

PROF. DR. JULIUS SPINNER
UNIVERSIDAD CATOLICA
VALPARAISO

La Cruz, (Chile) July 14, 1961
Avda. 21 de Mayo 2752

Miss Elizabeth K. Ralph
Physics Department
University of Pennsylvania
Philadelphia 4, Pa.

Dear Miss Ralph:

You would greatly oblige me by informing me, wether your Laboratory would be disposed to make a C_{14}-analysis of a sample of wood from a pre-incaic village which I excavated during the Archaeological Expedition to the Atacama Desert for the Catholic University of Valparaiso.

Could you, please, informe me
which quantity of wood would be necessary for the analysis;
how long it would take, to make it; and
how much would be the fees?

Thanking you beforehand, I remain

Sincerely yours

Julius Spinner

July 18, 1961

Prof. Dr. Julius Spinner
Avda. 21 de Mayo 2752
La Cruz, Chile

Dear Professor Spinner:

In regard to your inquiry about a C-14 analysis of a sample of wood from a pre-incaic village which you excavated during the Archaeological Expedition to the Atacama Desert, I regret to write that our laboratory schedule is completely filled at the present time.

I have enclosed an information sheet for Isotopes, Inc., which may help to guide you in regard to sample size requirements and costs. Their dating service is very reliable, and I recommend them highly for dating your sample. In addition to the problem of our full schedule, our policy has been to date series rather than one sample from a site, as a safeguard against the chance that a single sample might not be representative of the culture to be dated.

Sincerely yours,

Elizabeth K. Ralph

EKR:gm

bc - Dr. Alfred Kidder
University Museum

December 2, 1970

Dear Brian:

I don't know who is running that Archaeological Techniques course this year but it occurs to me that we most certainly ought to add to that course specific lectures on new scientific techniques in archaeology to be given by the people in ASCA, that is, Beth Ralph, John Winter, Bruce Bevan, Henry Michael and so forth.

It is obvious that archaeologists in general are very foggy about the possibility and limitations of all these techniques for dating, analysis, survey, aerial photography and so forth and also I am sure that all our students should understand these things because this is probably the most important development in archaeology in recent years. John Winter brought this up and I see no reason why those people shouldn't talk to our graduate students since they are all paid by the Museum.

Regards,

Froelich Rainey
Director

Dr. Brian Spooner
The University Museum
Near Eastern Section

October 8, 1969

Dr. Dragoslav Srejović
University of Belgrade
Dept. of archaeology
Archaeological Institute
Belgrade, Yugoslavia

Dear Dr. Srejović:

The C-14 results for your sample from the protoneolithic layer of Lepenski Vir I, house no. 32, are as follows:

Sample No.	5568 half-life	5730 half-life
P-1598	4864 ± 69 B.C.	5069 ± 71 B.C.

The date calculated with the 5730 half-life- namely, 5069 ± 71 B.C., is the preferred one. In terms of true ages, there may be an additional correction factor which would make the sample earlier. However, we do not yet have tree-ring-dated control samples beyond 4500 B.C. (in terms of radiocarbon years) so that we do not know how large this discrepancy might be.

I have included a copy for Dr. Letica

With best regards,

Elizabeth K. Ralph

cc: Dr. Froelich Rainey

EKR/emf

MASCA

F 50

November 5, 1969

Miss Elizabeth Ralph
The University Museum
33rd and Spruce streets
Philadelphia 19104
Pennsylvania USA

Dear Miss Ralph,

Thank you very much for your letter of October 8, and the results of C-14 sample from Lepenski vir.
We are really very satisfied with the results and we are very grateful to you and to Dr. Rainey to have been so kind to help us in our investigations of Lepenski vir.
We look forward to the pleasure of seeing you in Yugoslavia, perhaps the next summer.
Thank you once again, yours very sincerely

D. Srejović
Z. Letica

Dr. Dragoslav Srejović
Dr. Zagorka Letica

Masca

November 5, 1969

Dr. Froelich Rainey
The University Museum
33rd and Spruce streets
Philadelphia 19104
Pennsylvania USA

Dear Dr. Rainey,

we have received the letter from Miss Ralph with the results of C-14 sample from Lepenski vir. We thank you very much for your kindness in helping us to obtain these precious datas, which are very important for the datation of Lepenski vir. We are very satisfied with the ~~ana~~ results of analyze which can be insert in the others.

We thank you too for the interesting article about Sybaris, and the books for our library, on the basis of exchange. We hope that the librarian will be in contact.

With best regards,

yours sincerely
D. Srejović
Z. Letica
Dr. Dragoslav Srejović

Dr. Zagorka Letica

AVIONOM
PAR AVION

Dr.Z.Letica
17a Laze Simića
Beograd
Yugoslavia

BEOGRAD 3

Dr.Froelich Rainey

The University Museum
33rd and Spruce streets

Philadelphia 19104
Pennsylvania
U S A

Derrick Scone, Hester Fringe, and John Mucksweat in Orlando Sashweight's *Bitter Glue*, 1947

NEW YORK, NY PM 1 APR 10001

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April 2

Dear Ms. Ralph,

Thank you for your letter of March 2, acknowledging receipt of my letter to Dr. Rainey.

I shall look forward to hearing from you as matters progress.

Thank you again for your consideration.

Kathleen Staples

Elizabeth R. Ralph
Associate Director
MASCA
The University Museum
33rd & Spruce Streets
Philadelphia, Pa.
19104

DOGEAR WRYDE POSTCARDS
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Designed for New York City Ballet
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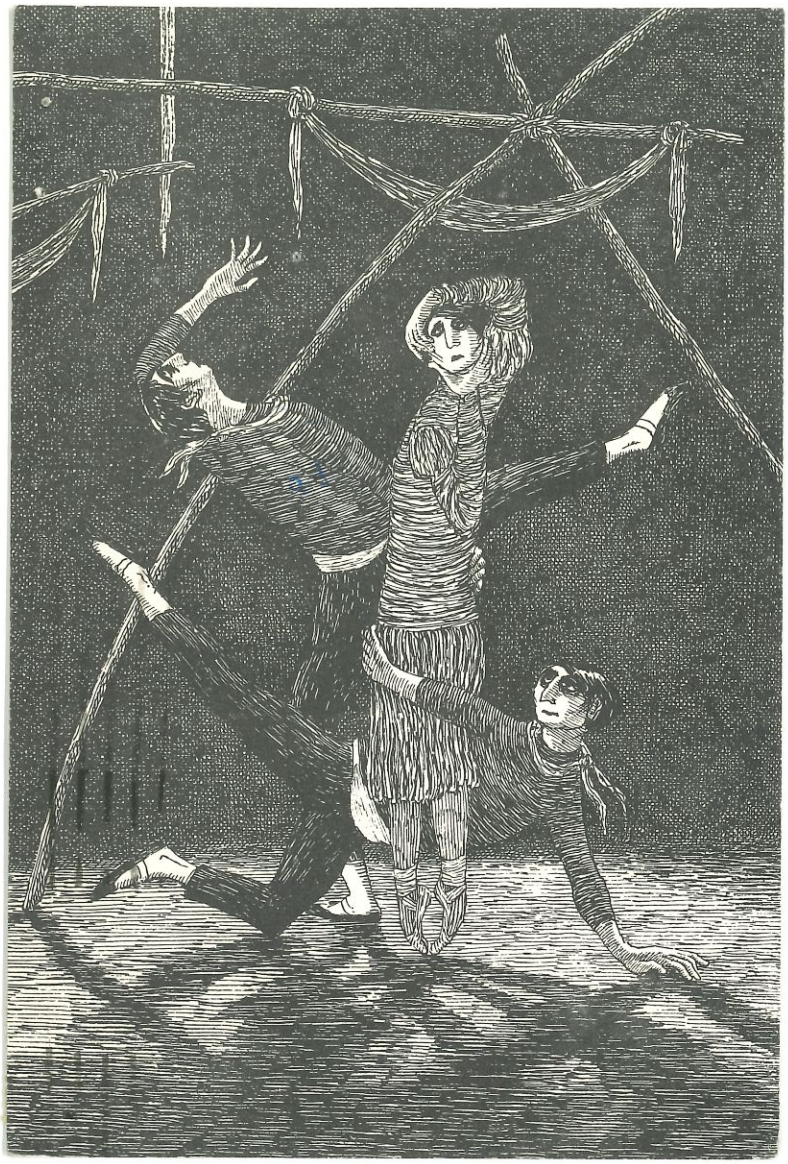
N.Y., N.Y. 10003



Beth -
This is the girl I spoke of yesterday - will you write a copy of your letter to her? Also I want to see what we will put up a course for.
FJO

February 20, 1977

Kathleen Staples
P. O. Box 74
Cooper Station
New York, N.Y. 10003

Dear Dr. Rainey:

I am writing you at this late date to inquire whether you would still be interested in putting together a diploma course for me in the Techniques of Conservation. I understand that you and Elizabeth Lyons had arranged to make available an opportunity for me to study under your tutelage as a tuition-paying student at MASCA for last fall.

In the spring of 1976 I received my B.F.A. from Parsons' School of Design in General Illustration, and am an accomplished draughtsman. Dr. Chet Gorman found a few of my drawings helpful at Ban Chieng during my stay of two weeks in the summer of 1975. He entrusted happy me with the lifting of a baby burial from an encrusted clay jar. I regret now that I didn't pursue that career, but I'm hoping that this request will not come too late.

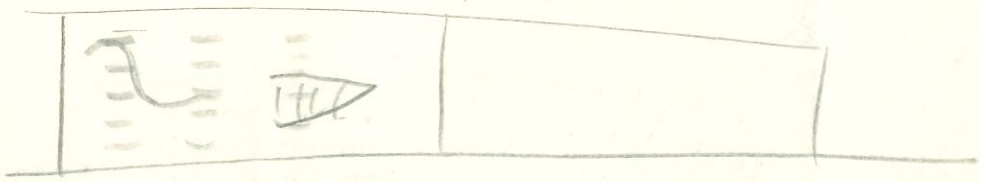
Presently I am employed in a Securities firm on Wall Street trying to sell municipal bonds. At your convenience I would gladly come down to Washington or Philadelphia with some of my sketches to meet you.

My parents were briefly in town and send you and Marina their best wishes.

Thank you for your consideration.

Yours very truly,

Kathleen Staples



March 2, 1977

Miss Kathleen Staples
P.O. Box 74
Cooper Station
New York, New York 10003

Dear Miss Staples:

Dr. Rainey talked to me on Saturday about your interest in taking a course at MASCA, and he has now forwarded your letter of February 20th.

MASCA is supported almost entirely by grants from the National Science Foundation, and at the moment we are between grants. Therefore, we do not know whether we shall have staff members available for teaching.

As soon as we hear from the NSF, we shall be in touch with you,

Sincerely yours,

Elizabeth K. Ralph

CHEMISTRY DEPARTMENT
THE UNIVERSITY
GLASGOW G12 8QQ
TEL.: 041-339-8855
EXT. 7490

Radiocarbon Dating Laboratory

Friday, May 1st

Drs. E.K. Ralph and B. Lawn
Radiocarbon Laboratory
University of Pennsylvania
Dept. of Physics DRL/E1
Penn. 19104

Dear Colleagues,

I will be attending a conference at B.N.L., Upton, New York, from May 17th - 22nd and I hope to have some free time afterwards to visit one or two radiocarbon laboratories.

I would very much welcome the opportunity to visit your lab. and I wonder if I may make a brief (a.m./p.m.) visit during the week 24th - 29th May? Provided that such a tentative arrangement is acceptable, I will phone to confirm a more definite time.

Looking forward to meeting you again.

Sincerely yours,

Michael J. Stenhouse

Michael J. Stenhouse (Dr.)
Co-director
Radiocarbon Laboratories

Dr. Barbara Stephen
Royal Ontario Museum
100 Queen's Park
Toronto, Ontario M5S 2C6, Canada

August 21, 1974

Dear Dr. Stephen:

Thank you for seeing me and for looking at the pictures of my Chung. I am sorry to have come without prior arrangement and at a time when you were preoccupied with the Chinese Exhibition.

In the course of our conversation you mentioned that you were familiar with other bronzes which still retain a portion of their mold's core. I found this very interesting and would like to make mention of it when or if I write about my Chung. Can you give me information about some specific bronze - hopefully one for which there is an established provenance?

Dr. Thomas Chase of the Freer Gallery in Washington will be here in Philadelphia on Friday and I have been told he has expressed a desire to see the Chung. I am looking forward to his visit and hope he will express an opinion.

In closing, may I say I do appreciate the problems inherent in any attempt to date ancient materials. I hope to proceed with doubled care in view of my own lack of professional training in this field.

Again, thanks for seeing me and I did enjoy my opportunity to talk to you, Dr. Irwin and Mr. Lake.

Sincerely yours,

Beth: Thought you might be amused by this - I sent it on my own stationery so she does have a record of my name and address (which you couldn't be sure of from this). I'm hoping that she was referring to one of their two very famous chungs from a well authenticated set with inscriptions on them and that eventually she will get a TL date since she ought to be bright enough t see that it would be useful when she gets over defending her rights as an eyeball expert!

JR.

CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA, CALIFORNIA 91109

303

W. K. KELLOGG RADIATION LABORATORY

Tues.

Dear Beth,

How is everything going? What came of your discussions with Paul? There is a lot of geophysics going on out here. Wasserburg is here and they do a lot of isotope analysis, etc.

I came across some C^{14} data in:

Proceedings of the 9th International Conference on Cosmic Rays
London Sept 1965 vol. I published by
Institute of Physics and Physical Society, London, 1966

p. 888

see page 81 by Lal, page 597, Kigoshi, and page 605, Lal.

On page 598 they give our old magnetic curve. But the C^{14} data doesn't look like yours. does it? See later on page 605 ff he says ocean circulation is what controls the C^{14} activity.

He says Lal + Peters have an article in the forthcoming Handbuch der Physik vol 46

Do you believe the data of Stuiver and ~~Suess~~ I guess Suess?

Is there anything I should look into out here?

We plan to drive back Jan 2 - 15 and go thru Grand Canyon, Little Rock Arkansas maybe St Louis.

I hope we don't get snowed in —

Sincerely
Bill ~~Stephens~~

W. F.

Barbara Lown
594-8726
8069

November 17, 1966

Dr. W. E. Stephens
Kellogg Radiation Lab.
Calif. Inst. of Tech.
1201 E. California Blvd.
Pasadena, Calif. 91104

Dear Dr. Stephens:

Thank you for your letter and for calling my attention to the Proceedings of the 9th International Conference on Cosmic Rays.

The Yaku Sugi C^{14} data on p. 598 are based on their cedar tree which was not really tree-ring-dated - just ring-counted. Therefore, there is probably a consistent error in true ages although for comparative purposes it is all right. I had just come across the archaeomagnetic results from Czechoslovakia (curve enclosed). The dip at 3600 B.C. looks very interesting and might provide us with the duration of the period. Arizona has promised to furnish us with bristlecone pine sections going back to 4400 B.C. before the end of the year. When they arrive, we'll date them as rapidly as possible.

I think that Stuiver and Suess' data are reasonably good, at least, more reliable than Damon's (who has terrible background fluctuations), but, perhaps, measured a little too hastily. I suspect that most of their short-term (except for A.D. 1700-1500) variations are due to laboratory scatter because when we find these and repeat them, we get more consistent results.

We are still "up-in-the air" with Dr. Faul, and are waiting for the architect to estimate the cost of excavating a hole and covering it with thick concrete adjacent to the present building. The background in their basement is 30% higher than here (has only two wooden floors above) and about 6% of this is due to the Co^{60} source in the General Laboratories Building on 34th St. Dr. Faul writes well and he certainly is an energetic person, but he is a bit of an "I told you so" when it comes to doing experiments with him. This and the fact that they have so few facilities in that old building bother me.

Dr. W. E. Stephens November 17, 1966

I have enclosed a copy of our new grant proposal which Dr. Faul has kindly reviewed and commented upon. I won't send it off until December, so that if you think that it should be revised, please don't hesitate to say so.

I hope that you have a good trip home and don't get snowbound.

With best regards,

Beth Ralph

EKR/deh

Encl.

Christmas Greetings from New Zealand

I hope your search for support of the C-14 conference turns up some money also. It would be a fine thing to have it at Penn in '76. I am sorry I can't be of more direct help.

Jessie sends her regards as did Henry Polach when we left Canberra - I haven't seen Rafter yet. Probably Monday.

I didn't understand your comment re radiation sensitivity as related to firing temps. Does this mean you can't check the sensitivity unless you know the firing temp.?

I am sending these in a hurry to get it back to you. I guess by now you have discovered there problems with Otto Haas. I hope you have other possibilities by now for support.

Let me help in the best way, but realize the differences in the Earth Sciences area. Would RANN be an NSF source of support?

Good luck in your endeavours and let me know how it goes. Evelyn & Lillian have my sympathy. The Universities are more reliable than hotels, because some of our reservations have been changed.

Best regards

Bill Stephens

Helen sends her greetings -

Dear Betty - I met a lady from Clark Univ. (Dorothy Mungall) who lives at the Boston Y. She is going to Hawaii for a month on vacation. Maybe you could look her up. Bill

AEROGRAMME **BY AIR MAIL**

Dr. Beth Ralph
Rittenhaus Lab (Physics Dept)
University of Pennsylvania
Philadelphia, Pa. 19174
USA.

Second fold here

If anything is enclosed, this form will be surcharged at rate for Air Mail letters.

SENDER'S NAME AND ADDRESS

W.E. Stephens
6 Cornwall St
Lower Hutt, N.Z.

ISSUED BY THE NEW ZEALAND POST OFFICE FOR POSTING IN NEW ZEALAND TO OVERSEAS ADDRESSES

To open cut here

To open cut here

Dear Beth Sat. 23 Nov

I was sorry to hear of the support problems about MASCA. I was therefore glad to hear that Mose bristle cone grant was being renewed.

As to the shift of your MASCA proposal to Earth Sciences, I have several concerns.

First, if there is no money in Soc. Sciences, then almost any ~~thing~~ else might be better and have more chance. However, as I recall, a lot of MASCA is service and support for archaeology, etc. And as such it would not be suitable for support by a specifically research oriented agency such as the Earth Sciences and Physical Sciences. So you probably would not expect the present service program of MASCA to be supported from these research groups. I would expect that reviewers would only consider actual research problems and their proposed investigation and hopefully expected solutions. Therefore, before any new support plan is considered you should investigate the possible reception it would have at NSF, etc. You might profitably go down to Washington and talks with the people to whom the proposals would go.

I should caution you also to be a little "hard boiled" and realistic about whether all the people now involved in MASCA could be fitted into the research type involvement that might be necessary.

Doesn't some of MASCA come directly out of museum money? Was Otto Haas supposed to support some of the projects now that he is involved?

Altho this may sound negative, I have no objection to helping in any way I can and that you and Fro think might be appropriate. You can use my name whenever you think it would be useful. I can rely on you and Fro to be careful and scientifically good and realistic. But don't think it will be a cure all. I suppose that money is getting tight in all areas with the recognition of a real recession.

Also I want to make clear that I will help with time and effort because I am interested in your work and I don't need a title to secure that help. Actually Fro and you are both well known and able to secure recognition of your proposals. I think MASCA was Fro's great interest and that he might want to continue his museum activities by concentrating in that area. Certainly he is the best one to give advice about raising support money and for directions of research (along with you). And I think it was his idea to get money from Haas by involving him as director of MASCA. Maybe co-principal investigator is what you should use my name for. And you or Fro or even Haas - director of MASCA. (I can't give any money, I'll be broke when we get home)

Talk to Fro and then do what you think best after checking on the NSF and other grantors.

We got here early last afternoon and surprised Jesse Donald because we had that not to arrive till today. But Jessie is very hospitable and is being a very nice host.

New Zealand is a beautiful and nice country and we are enjoying it.

RESEARCH SCHOOL OF PHYSICAL SCIENCES
Institute of Advanced Studies
THE AUSTRALIAN NATIONAL UNIVERSITY
BOX 4, P.O., CANBERRA, A.C.T., AUSTRALIA, 2600

DIRECTOR:
PROFESSOR SIR ERNEST TITTERTON, C.M.G., F.A.A.

TELEPHONE: 49-5111
TELEGRAMS AND CABLES:
"NATUNIV" CANBERRA

$145,000

9/28/74

Dear Beth,

I just met Dr. Polach here and had a quick look at his lab. and will see him more soon. He is quite happy with liquid counting and is confident that he leads in that respect. So I will try to find out what I can about the technique. If you let me know of your questions and problems with it, maybe I can get some answers. He sends his regards. He is in Geophysics and right now is worried about neutron background from the nuclear accelerators here.

We are more or less settled here for a few months and are glad spring is coming. It still is cold here at night. There was a 1/8" layer of ice on the window of the car this morning. We have a small car, a Galant, but it goes.

What a coincidence! I had just started this letter when yours came. We haven't heard from Jessie Donald. I was sorry to hear that her husband had died. Too bad Henry Michael didn't find any older bristle cones. I guess it is just luck. Hope you try some more. Is the benzene train working? How much money do you need for the C^{14} conference in 1976? Next time I write Gregorian I will put in a plug for it. I trust your research grant from NSF will go thru okay.

The thermoluminescence here is in another department: pre history and the person involved is Dr. Allan Mortlock, but I haven't caught up with him yet.

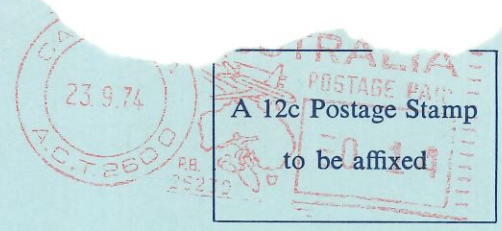
The football season is just ending so we see all the finals on TV, soccer, rugby, and Australian football. The players are sure rough and tough - Haven't seen hockey and cricket is just starting -

Best wishes

Helen & Bill Stephens

AEROGRAMME

BY AIR MAIL · PAR AVION



A 12c Postage Stamp to be affixed

Dr Beth Ralph
Rittenhouse Laboratory. (Physics)
University of Pennsylvania
Philadelphia
Penna. 19174
U.S.A.

COUNTRY OF DESTINATION

Approved by Postmaster-General
for acceptance as Aerogramme No. 2

"ARCHER" AEROGRAMME
Regd. Trade Mark

SENDER'S NAME AND ADDRESS

W.E. Stephens Nuclear Physics Dept.
~~DIRECTOR~~, RESEARCH SCHOOL OF PHYSICAL SCIENCES
THE AUSTRALIAN NATIONAL UNIVERSITY
BOX 4, P.O.,
CANBERRA, A.C.T.,
AUSTRALIA 2600

POSTCODE

FOLD FLAPS BEFORE MAK[ING]

IF ANY[...]
THIS FORM M[UST]

M. FOR
[NE]W SECOND
[STI]CKER ATTACHED,
[FO]R AIR MAIL LETTERS.

TO OPEN SLIT HERE FIRST

SECOND FOLD HERE

FIRST FOLD HERE

September 30, 1974

Dr. William E. Stephens
Research School of Physical Sciences
Nuclear Physics Department
Institute of Advanced Studies
The Australian National University
Box 4, P.O.
Canberra, A.C.T.
Australia 2600

Dear Bill:

Many thanks for your recent letter. About the benzene, I guess there are two main questions:

1) How long does Dr. Polach heat and pump the lithium carbide and at what temperature (after the reaction)?

2) Which catalyst is he using to convert acetylene to benzene, and how does he heat and pump it to prepare it for the reaction?

A chemist visited us last week and he told us that we should not use stopcock grease and should change to mercury float valves. Might ask Dr. Polach if he has had any trouble with stopcock grease.

Our benzene train is ready to work, but we don't find time to operate it. Also, the print-out of the liquid scintillation spectrometer is broken and is being repaired in France - it has been there for months. However, we seem to be keeping up with our backlog with the two CO_2 counters.

For the C^{14} conference, I wrote up a budget of $145,000. Speaking of conferences, Mark and I attended a good one at the Boston Museum of Fine Arts last week. We spent two days discussing all of the problems of TL dating and a half day on C^{14} and archaeomagnetic dating. Dr. Hall and others from Oxford were there as well as representatives from about 10 TL labs in the U.S.A. The symposium was supported by the Kress Foundation and they paid us more than our expenses.

I just called the NSF and our new bristlecone grant should arrive October 15th -- only two weeks late. We have included funds to rent a

crawler-type tractor with a back hoe attachment so that Henry Michael can dig deeper next summer.

When I was in Sidney in August, I used to freeze at dances and formal dinners in a thin evening gown. It was warmer on the hockey fields.

With best regards to you and Helen,

Elizabeth K. Ralph

EKR/cat

UNIVERSITY of PENNSYLVANIA
PHILADELPHIA 19104

The Faculty of Arts and Sciences

DEPARTMENT OF PHYSICS

August 14, 1980

Dr. Elizabeth Ralph
Res. Associate Physics
BW4 DRL/E1

Dear Beth:

I am writing to thank you, on behalf of Bill's family and friends, for your recent contribution to the William E. Stephens Memorial Fund. We are currently investigating uses for the fund which would be appropriate reminders of Bill's life as a scholar and teacher.

Sincerely,

Walter D. Wales
Chairman

WDW/fh

AMERICAN ACADEMY IN ROME
VIA ANGELO MASINA, 5
(PORTA S. PANCRAZIO)
ROME

CABLE ADDRESS
"AMACADMY"

1 June 1962 [STERLING]

Dear Beth:

I gather from both Mr. Rainey and D. Brown that you are having a rather busy time of it in muddy Sybaris, and also that Ellen has finally joined you. On the latter point it must be clarified that our telephone operator understood very little of what you were saying, and adds that you did not have the flight numbers etc. right, but she tried to leave messages for Ellen at the various and sundry airlines which fly from U.S.A. to Italy: I hope you finally connected. D.Brown got off after several days here, with some illuminating stories. There are, by the way, some new aerial photos of your area made by the Aerofototeca which I am trying to have prepared for you--as I am going there this afternoon I will see what I can have done about them. Apparently the mud-slushing has turned up alot of stuff though, so you seem to be on the right track !

I was in Venice and spoke at great lengths to Mr. Rainey, as well as Aitken who seems thoroughly pleasant and competent. Rainey had the following two bits of information to divulge: he will be back about 20 June, and you are not using the proton magnetometer at Sybaris and it might be gotten up here somehow. This latter point is of great interest to me. I would like to start looking at the acropolis at Tarquinia with it as soon as possible, and would greatly appreciate your sending it up here if it isn't in use down there. Ward-Perkins (director of the British School) is anxious to have a whirl at Veii with it for about 10 days which would work perfectly if we could get the thing here within the next two weeks. He has talked to Rainey about the area in question and they seem to have agreed on this sometime ago. There is one difficulty: the magnetometer should not go to Linington otherwise it will be out of commission at Vulci, which is not what Rainey or I had in mind. Linington seems convinced that he is the only one who can run and interpret the thing, but upon closer interrogation he had to admit that the whole thing was childishly simple and that even I might be able to run it and do the graphs, etc.--certainly Ward-Perkins is familiar with it and can do it as well, though I would be interested in working together with him.

In short, if you are really not using the p.m. and it works properly (after Aitken's investigations) could you send the bloody thing up here for me and Ward-Perkins to use ?? I suppose it will come via Lerici but with the specific stipulation that I, and not Linington should get the machine (he is a most difficult young man !)--the best way to insure that would be to write or cable me when you have shipped it off and how, I'll be at the Academy most of the time and can go rescue it from Lerici clutches before the big L. gets it.

I suppose Aitken told you about Venice, I'll be glad to inform you in greater detail when next I see you, which I hope will be soon. Please let me know when you're coming up here.

TIP. U. TERENZI - ROMA

My Tarquinia project is coming along, I think I mentioned it to you when I was last down there. A fine new series of aerial photographs has been made, and we'll see if something can't be made out of them before the p.m. is put to work.

Meanwhile best of luck to you, and my very kindest regards to Ellen whom I am very sorry to have missed here--when will either of you be up here ?? I have all sorts of problems to consider with Ellen, and am dying to drag her through all the Etruscan museums here!

Looking forward to the P.M., and seeing you soon, I am

. . . Cordially,

Arthur Sterling

STERLING

If Reply 4.6.62

Ellen

I suspect that you have misinterpreted whatever Dr. Rainey said about the proton magnetometer and its availability this summer. As you know, it is the only instrument that works here and our contract here specifies that we make an instrument survey this year. In other words, we drill or dig only where we find anomalies with the proton magnetometer. Therefore if we continue here until 20th July, it is not available before that, and, in addition, I have made arrangements to take it to Oxford, when I leave, for overhaul. It has been used for almost two years without servicing and is kept going now by repairs almost every evening. Leric has purchased a new one which should be in good shape. Even if you have to put up with Livingston in order to have the use of it, you would probably learn something from him, and find it advantageous in the long run.

See Current Grants Folder

Return To
DR. RAINEY
Chron Day

3311 Rowland Place, N.W.
Washington 8, D. C.
May 29, 1960

Dr. Froelich Rainey, Director
University Museum
33rd and Spruce Streets
Philadelphia 4, Pa.

Dear Dr. Rainey:

I am enclosing herewith the original and one carbon of "Electronics and Archeology." I was not able to think of a better title, but if you do, please substitute it.

I am also enclosing a sheet of "Explanations to go with the article" which you can pass on to Mr. Day.

My father will arrive home on June 14 according to present plans. We leave for Europe on June 27. Mother says to urge you to spend the night with us some time when you are in D.C. We will enjoy hearing about your trip to Iran, etc.

Please let me know if you wish me to come to Philadelphia to discuss this paper.

Mother joins me in sending best to you and your wife.

Sincerely,

Matthew

M. W. Stirling, Jr.

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
594-7400 (Area Code 215) — Cable Address "Antique"

July 1, 1969

Douglas F. Stieg
Rocky Hill Road
North Scituate
Rhode Island 02857

Dear Mr. Stieg:

Thank you for your letter of 25 June 1969 which has been forwarded to me in Dr. Rainey's absence.

Our cesium magnetometer, which was used in the exploration of the plain of Sybaris, Italy, was manufactured for us by Varian Associates. It has not been put into production. However, Varian does make another, similar instrument, somewhat less sensitive, but more rapid in use, which is available commercially. It is the V-4971 Portable Search Magnetometer, priced at $5,700.00. More information can be obtained by contacting the following:

Analytical Instruments Division
Varian Associates, Inc.
611 Hansen Way
Palo Alto
California 94303

Enclosed are several reprints describing our work with the cesium magnetometer which I hope you will find of assistance. A more detailed report of the field trials in Italy has been published by Miss E.K.Ralph in the Search for Sybaris, 1960-1965, F. G. Rainey and C. M. Lerici (University Museum, Philadelphia, Pa.) 1967, pp. 53-124.

Thank you for your interest.

Sincerely yours,

Martha R. Bell

Mrs. Lanny Bell

Enc. (7)

"A" Detachment
Ist MI BN (ARS)
Fort Bragg, N.C. 28307
July 20, 1973

Radiocarbon Laboratory
Applied Science Center for Archaeology
University of Pennsylvania
33rd & Spruce Streets
Philadelphia 4, Pa.

Gentlemen,

I am currently writing a book with the working title of the WRECK DIVERS HANDBOOK. As the title implies, it is intended as a handbook for those SCUBA divers that engage in the hobby of underwater wreck exploration.

I understand from Dr. Kukachka of the U.S. Forest Service Center for Wood Anatomy Research that your facility has in the past done some work in this area. (dating artifacts) If possible, could you tell me if you still do such work, and if so what the specimen requirements etc. are. As this area is completely out of my own area of expertise, any information would be appreciated.

I am enclosing a flyer from my last book for your edification.

Sincerely,

F. Stonehouse

Lt. F. Stonehouse

Enc.

Send C14 Newsletter

FS/gr

G. F. Bass
P. K. 9
Bodrum, Turkey

VASSAR COLLEGE
POUGHKEEPSIE · NEW YORK 12601
Department of Art

April 18, 1967

Professor George F. Bass
The University Museum
University of Pennsylvania
33rd and Spruce Streets
Philadelphia, Pa. 19104

Dear George,

I have a question and possibly a favor to ask. It has to do with radiocarbon lab runs. Last summer we recovered at my project at Kalenderhane Camii in Istanbul a piece of wood in a context that makes it certain that it was set during the course of construction of the core of the building. I have just received a sample of it from my Turkish collaborator, Doğan Kuban.

Since the date of the core of the building is much in dispute (ranging from 6 - 10 C.), and since this is one of the important questions that we hope to solve by our combined architectural survey and excavation, a radiocarbon date would be a very helpful piece of corroborating evidence.

Not having had experience with these matters before, I wonder weather Penn is equiped to run such samples and whether they are willing to take on outside jobs. If the answer to all of this is yes, I would like to know the approximate cost for doing so and the approximate length of time from receipt of the sample to the results. I might add that this is a Dumbarton Oaks sponsored project. If you shouldn't happen to have the answers at hand, I would appreciate your recommendation as to whom I might write.

I plan to be in Istanbul (c/o ARIT, Kupacilar Sok. 11, Sultanahmet, phone: 22 21 19) from about June 10th through mid-September, and it would be fine to see you there. There is an outside chance that I may also be in Bodrum the end of September, but I imagine that your season will be over by then. In any case good luck for the summer, and my apologies and thanks for having descended on you with the above request on Paul Revere Day.

As ever,

Cecil L. Striker

Dear Beth,
Can you answer this?
Best wishes,
George

UNIVERSITY of PENNSYLVANIA
PHILADELPHIA 19104

The College
DEPARTMENT OF PHYSICS

May 3, 1967

Dr. Cecil L. Striker
Department of Art
Vassar College
Poughkeepsie, N.Y. 12601

Dear Dr. Striker:

George Bass has forwarded to me your letter of April 18, 1967. In regard to the dating of your sample from Kalenderhane Camii, I am writing to say that occasionally we do accept outside jobs when the dating is of interest to the staff members of the Museum. In this case, I am not sure that the sample is earlier enough to be of great interest to them, and unfortunately Drs. Young, Kohler, and Bass are all in Turkey.

Another problem is that we have a year's backlog of samples waiting to be dated. Therefore, if you have sufficient funds, I recommend that you send your sample to Isotopes, Inc. They do very reliable dating and produce results within one month.

I have enclosed information about Isotopes' dating service.

Sincerely yours,

Elizabeth K. Ralph
Radiocarbon Laboratory

EKR:tb

pp. 3+4 sent to McLaughlin for comments

rec'd 12/61 ?

LINCLUDEN
PRESTON PARK
NORTH SHIELDS
NORTHUMBERLAND
ENGLAND

Dear Miss Ralph

C-14 and Other Antiquities

This replies to your letter of the 5th Dec and I thank you for the nice international aspect you give the archaeological researches by the interest you have shown in my work. We shall in my home here be pleased to make you welcome though the Stringer remarks I shall have to put my work-room into Apple Pie Order before I embark on entertaining visiting overseas scientists!

I note the 6-months hold-up due to tritium contamination. About my promised British wood samples of attested date: you could choose by personal inspection in July what Wood of mine you would like to take back to the States. Meanwhile, the Early 13TH Cent. AD is represented for me by two huge oak beams each about 14"x 7". I have with infinite labour sawn off a slice & turned a portion in my lathe to make a bon-bon dish for you; for special occasions over here in Britain, we serve, Chocolates or sweets, almonds raisens etc, in a little dish, to pass round, after the main meal; I don't know if you do the same in the States? This is posted to you under separate cover, with a green slip on the packet to help it through the Customs at zero duty, if possible.

Tunnel Research, even on the Map, has been great fun. (Our automobile has just had a new engine fitted, by a man who is a mechanical genius but he has got some of the electrics wrong & until I have sorted them out I don't care to take the motor to remote places, where I might get stuck.) However, I have visited 2 sites close at hand & been into 1 cave, where I found 50-60 feet of sandstone gave 50% reduction in ~~back~~ cosmic background. There have been plenty of people, mostly the older generation, who have given details of sites & I have now, references on the Map to about 30.

One that sounds especially good is a Drift Mine for fire-clay that goes in under some high rolling hills that should give plenty of rock-cover. The mine manager has agreed I can take my counter into the drift for a test.

It is alleged by the younger set, that most of the tunnels are imaginary & exist in folklore only. However, there is definitely a tunnel under the river Tyne, connecting an old Priory with a Castle; the son of the previous tenant has told me where to seek the entrance in the Priory, now used as a Rectory. The man at the Castle is quite keen to help, too. This tunnel dates from the time of the violent religious persecutions over here. — An old salmon fisherman tells me how as a boy 50 years ago he crawled through a tunnel at North Shields, called Jingling Geordie's Hole & he knows where the entrance is. J. G. was a bad character; his tunnel was about 3/8 or 1/2 mile long, he used it for secret communications in bad weather, arranging to douse the harbour light then dodging back to put on a false light to lure sailing ships to a wrecking spot on the rocks. Another local friend, Jimmy, has a colourful ancestry, being descended from a family of pirates & wreckers in the Orkney Islands. He was shown the entrence, as a boy, by his Father & described it to me, but I found it was 90% earthed up. One of our fitters was shown a tunnel by his Father but a school now stands on the site. One of our Firm's older labourers tells me of a tunnel, coming up in their cricket ground. A touring cyclist has told me of a little known cave in Shaftoe Crag and of another beside the old course of a Roman road known as The Devil's Causeway, this latter sounds like a little shrine to me.

I'm not unduly bothered about local rock radiation, it's mainly secondary rock, sandstone etc and anyway, I have a kind friend who can get me ancient lead, smelted before the Industrial Revolution. So I ought to be able to deal with ~~that~~ this Soften emanation. By careful choice at the Design stage, I have

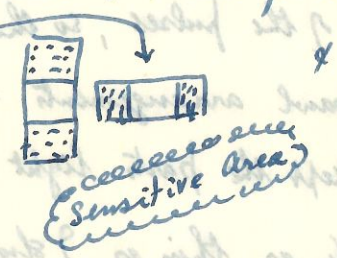
Rec'd 12/61 ?

reduced my counting equipment from 5 mains valves to just 3 transistors; 1 for HT & 2 for the amplifier, selected to be able to cope with the fast-fronts of the pulses, so that the dead time is quite short. I jewelled the pawl arrangements of the E-M. register to cut power requirements & kept the parts light in weight. The present counter tube is not really as thin as I should like it to be. To pass all possible Soft Betas I have designed a new tube ultra-thin but mechanically strong, with nearly 4π collection. There is a chemist on the panel of advisors who help me. But as I aim to get the background very low, I shall go for the solid carbon method first.

GRAMMAC.

Well, what I do here, is to have a modified Colpitt's oscillator, incorporating a high class transistor, the OC-169, with the oscillator coil coupled by a ferrite core with a pick off coil, all tuned to 27 Mc. The pick off coil feeds energy to a pair of insulated electrodes about 10" dia that lie on the grass. Due to the high frequency, the capacitative resistance to ground is almost zero. The current that flows depends then on earth resistance. To read the current, a microammeter with associated germanium diode rectifiers is used. Calibration was effected with ±5% grade resistors. The spacing between the electrodes is adjustable to suit the terrain, ie to seek a buried ditch 5 feet deep, I used 6ft spacing.

MET-TEC But what is your "underground exploration"? — If you are seeking metallic bodies such as ore-lodes, I'd go for a different circuit, like the metal detector I have developed. The conventional metal detector either changes its note on nearing metal or else it is set to "Null" & a note comes on near metal. I didn't like this idea very much, so some 10 years ago, I designed my own test gear. A battery-driven electric clock supplied pulses at every 2/5 sec to a relay which closed the circuit of an HF buzzer.

A-c was picked off the buzzer coil & fed to a 5000 Ω coil about the size of a 20 cigarette 'deck'. The pick-up coil was arranged the Foster (?) way 

& the signal was observed with HR telephones. The buzzer reed was tuned to match the resonant peak of the 'phones at 1200 cycles. Now, the pick-up coil had a non-metallic micrometer screw so that in air, away from any metal, the bleeps in the phones could be set to silence. On approaching any metal, unbalance of the coils was caused, indicated by the onset of bleeps in the telephones.

It is far far easier to detect the onset of separate bleeps than to detect a slow rise of a note or a change in note.

When transistors came along, I took out the electric clock & buzzer and put in a transistorised squegging oscillator. In the head-band of the telephones I fitted a light-weight transistor amplifier, all in a 1 ounce tobacco tin. The squegger has its capacitance tuned to match the telephone's resonant period to give maximum sensitivity. Available metal detectors, rated by the standard criterion, seem to be able to detect metal at a distance of 1/2 coil diameter. This one of mine will work at, at-least coil diameter, for small objects such as a half-crown. It will detect a biscuit tin at about 1½ feet & an electric cooker at 1½ yards.

Right now, I'm planning coils about 20" square. Interested?

Must close, it is near time to catch the mail.

With all Good Wishes for Xmas & the New Year

Yours Sincerely

Jack E. Crawford Stringer

G.D.MacLaughlin
Perkiomenville,Pa.
January 11,1962

Dear Beth:

Mr.Stringer seems to be a very interesting person and I was interested in reading his letter concerning the "Grammac" and "Met-Tec".
Before I forget,the delay in the report was due to postage lack. I put on 20¢ and it required 24¢! Our local postoffice is very efficient at returning mail. I'm sorry for the delay.

To get back to Mr.Stringer, the Grammac sounds quite interesting. The method is a simple way to measure ground resistance and should be quite rapid as the insulated plates could be slid over the ground.
The choice of frequency is interesting and probably is the result of field work as trdnsistors operating at 27mc are more expensive than low frequency transistors.

The ground resistance at radio frequencies is complex and consists of resistive and capacitive reactance. Above 20 mc the capacity predominates. It would seemlogical that a ditch,for example, would have a different dielectric constant resulting in a variation in current. It would be of interest to ask if other frequencies were tried.

A more elaborate system is used as a crevasse detector in the Arctic on the snow-mobiles.
An article on the crevasse detector is in one of the Electronic magazines and I shall try to find it.

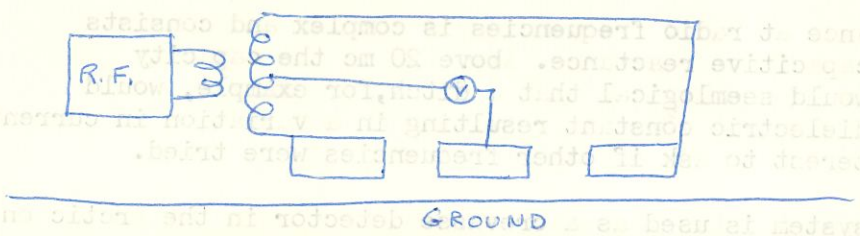
This system used a variation of the four terminal system similar to the resistance measuring equipment.
I had considered using a four terminal system with 4 in line plates.The two outer plates fed with a constant current R-F generator. The two inner plates coupled to a high impedance RF voltmeter. This system should permit quantitative measurement.
The Grammac,however,is appealing because of it's simplicity,and sometimes the simpler equipment is more than adequate. It would be encouraging to find a system to substitute for the present resistance measurement methdd.

Now the "Met-Tec". This basic system is one of the earlier search coil arrangements for metal detectors.
I recall a unit with 24 inch square coils with 6 pounds of wire on the transmitting andxfx receiving coils. My father built one from an article in Mechanix Illustrated of 1934 or 1935. It used a buzzer for the source and headphones for the detector. We could find buried tin cans but never found coins or rings. This basic problem and limitation of sensitivity of this type unit is the null obtained by perpendicular mounting of the two coils. A null is obtained by mechanical adjustment of the pickup coil.
The mine detectors use a more elaborate multiple coil arrangement

to permit balancing by varying current to bucking coils. All of these systems are relatively insensitive as the null is not complete and feedthru occurs when too much power is used in transmitter coils or too much sensitivity in the pickup amplifier.

The seperate bleep methdd is very clever and would definately increase sensitivity. Unfortunately,increasing the size of the coils does not give equivilant increase in sensitivity as balance is more difficult and the null becomes poorer. Also a smaller % of the field area is influenced by small objects.
I think to get the sensitivity we need,a different approach is required as the present systems seem to be deficient about one order of magnitude.

Speaking of bridges,I just got an idea. If three equally spaced electrodes were arranged in a line and the two outer electrodes ~~were connected~~ , fed R.F. 180 degrees out of phase, the center electrode signal should be zero when the RF ground resistance was uniform between the electrodes. This has the advantage of measuring the differential ground resistance instead of a variation in absolute amplitude. Block follows.



Circuit is simple and should be very sensitive. When I get a chance I will try a breadboard setup. I definately think the Grammac idea should be investigated further. The ease of operation is attractive.

It's very encouraging to see various methods emerging that are applicable to Archeology and I feel we have only scratched the surface.

Sincerely,

Greg

January 15, 1962.

Dr. J. E. C. Stringer,
Lincluden,
Preston Park.
North Shields,
Northumberland, England.

Dear Dr. Stringer:

Thank you very much for the bon-bon dish. I cannot think of adequate words to describe how attractive it is - its nice shape, the lovely oak tree-ring patterns, and most important, the fact that you made it. I treasure it very much.

Your Tunnel Research does sound like fun and I hope you do find one with low background radiations. From what I have been reading about your weather, you may have an additional snow cover as well.

Thank you too for the information about your GRAMMAC and MET-TEC. For the former, I am wondering why you happened to select 27mc. Did you experiment first with lower frequencies? The main reason for my question is that transistors here which operate at 27 mc are more expensive than low frequency ones. I am wondering too what sensitivities you obtained at 27 mc and, possibly, at other frequencies.

In regard to MET-TEC, we do have uses for a sensitive metal detector - the immediate need is for the location of Hittite graves at Gordian, Turkey (possibly in April). The demands are extreme, however. The metal objects are small bronze coins, jewelry, etc. at depths of 1 meter or more. At the moment, we have purchased a surplus "vacuum cleaner" type with 9 x 12 in. search head (AN-PRS-3) which isn't sufficiently sensitive, but may assist us in learning something about the problems. Our archaeologists don't like to carry around bulky things, and I have a feeling that they would "balk" at toting 20 in. coils. However, they are eager to have a means of locating the graves in order to guide them in their excavations.

I seem to have problems rather than helpful information to offer, but wanted to write mostly to thank you for your letter and for the attractive oak dish.

With best regards to you and Mrs. Stringer, I am

Sincerely yours,

EKR:LF

Elizabeth K. Ralph

Draft retained, for refce. [STRINGER]

URGENT Jan 22nd 1962 Address as on Back.

Dear Miss Raeph

I take pleasure in acknowledging your letter of Jan 15th. with many thanks I reply quickly because it seems field instrument gear to my patterns would be helpful to your archaeological colleague for the proposed Turkey surveys, and if you decided to make any move, there is not a lot of time.

Referring specifically to the AN-PRS-3 "surplus" metal detector; if this has about the same sensitivity as other services mine detectors, its max.m range of detection for a coin will be about 1/2 x Coil diameter. The Met-Tec will work at twice this distance, ie range for a coin equal to coil diameter. Admittedly, this is not the 1 metre wanted but it is 100% improvement!

I am Fri. Jan 26 giving a lecture-demonstration with the Met-Tec & GRAMMAC to the International Radio Control Section of the Tyneside Model & Experimental Engineers. They are interested in transistors. There is likely to be a lively discussion. Useful ideas may crop up. I wish you lived nearer & could come along.

I would think, other things being equal, your friend would stand the best chance of finding Hittite graves by considering them as in-filled ditches. The GRAMMAC has pin-pointed buried trenches from 12" wide x 18" dp to 10ft wide x 5ft dp. The graves should be detectable by taking resistivity readings at 3ft steps on line traverses over likely territory. As scraping proceeded, a metal detector could be used at every 3" going down, to get the position of any metal grave goods, so they could be uncovered gently.

This season, I am going with an excavation party to Traprain Law, in Scotland. Therefore I had better not volunteer GRAMMAC No.1 for Turkey. But we are very quick there is time enough to make a No.2 ready for April. But not enough money. To save time I should have to farm out much of the work & pay people to do it. It just depends on what decision the Museum Authority would like to make. £50 say 150 $ should be sufficient to cover eventualities. As against the charges likely to be associated with labour, transport & Commissariat of the Gordion survey I do not think this is a large figure. (Effective dowsing equipment — proton resonance magnetometer £750! — cut excavation labour at Maiden Castle by a factor of 30 times.)

As the ultimate, my suggestion is that you might care to think of Co-opting myself + GRAMMAC. — There is a standing arrangement with my firm, that they will grant me archaeological leave of absence up to about 2 months, but at Zero Pay. Earlier, I used this privilege for my dendro-magnetic work. Cost c. £110 per month. This would eliminate rushing the construction of a No2 instrument. It would also constitute a wonderful broadening to my archaeological ~~bug~~ horizon. I give you, as reference, the name of Mr. Harry W. Wells, American Embassy, APO 676, New York, NY. He has very kindly refereed some of my earlier work & knows me & family personally.

early August, perhaps also, Easter?

The scenery of my Scottish archaeological trip last year has induced us to think of spending a short vacation in Galloway, S.W. Scotland. We plan to find a farm-house or country-pub, as near to Stroan as we can. This is near Glen of Trool, with 2500ft. hills either side. This will be about July 28 for 1 week. Presumably you will have the use of a car on your trip to Britain, I can strongly recommend this comparatively little-known corner of Scotland. My son & I like trout fishing & there are lochs & burns all round!

The GRAMMAR calls for only 1 expensive transistor. 27 MC is used to cut down electrode size & to keep capacitative component of circuit impedance down to a value that will be negligible in comparison with the soil resistance.

See "Nature" Jan 20, p 264 for a little gadget of mine; electrical, not archaeological.

Let me hear from you.

Yours sincerely

Jack E. Crawford Stringer.

← First fold here →

To open cut here →

Sender's name and address: J. E. CRAWFORD STRINGER

LINCLUDEN PRESTON PARK

NORTH SHIELDS NORTHUMBERLAND

ENGLAND

Q514
394 104
8067 ET
SLT

AN AIR LETTER SHOULD NOT CONTAIN ANY ENCLOSURE; IF IT DOES IT WILL BE SURCHARGED OR SENT BY ORDINARY MAIL.

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BY AIR MAIL
PAR AVION
AIR LETTER
AEROGRAMME

MISS E. K. RALPH

UNIVERSITY OF PENNSYLVANIA

PHILADELPHIA 4

USA

DEPARTMENT OF PHYSICS

February 20, 1962 AIRMAIL

Dr. J. E. Crawford Stringer
Lincluden, Preston Park
North Shields, Northumberland
England

Dear Dr. Stringer:

Thank you for your letter of January 22nd, and I hope that you will forgive my slowness in replying. Dr. Rainey, Director of the University Museum, was away so that planning for the future awaited his return.

We appreciate very much your offer to go to Turkey on our behalf with your GRAMMAC, but we think that we should not accept it at this time. Unfortunately, we have made a contract with a small local instrumentation company to build a sensitive metal detector, and we plan to teach a graduate student who is scheduled to join the expedition to use it and our Gossen "Geohm" which we have already purchased. Funds are always a nuisance because with these and other present commitments, we don't have any left over. We hope to receive a new grant in September which will, perhaps, enable us to purchase additional instruments.

Your plans for archaeological trips in Scotland sound very interesting, and I wish you the best of success.

Sincerely yours,

Elizabeth K. Ralph

EKR/deh

WITH THE AUTHOR'S COMPLIMENTS

(*Reprinted from Nature, Vol.* 195, *No.* 4845, *pp.* 988–989, *September* 8, 1962)

Thermocouple Electric Motors

FURTHER to the recent publications[1,2] on the subject of electrostatic motors running at high voltage and low current, I gave consideration to design possibilities of a thermocouple-driven motor operating at a few mV. but a heavy current.

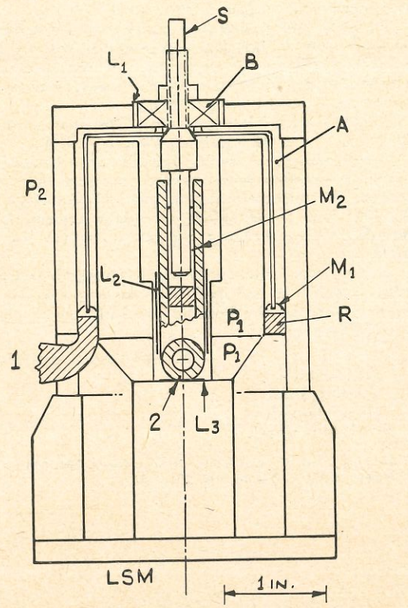

Fig. 1. Schematic section of thermocouple motor. P_1P_2, Soft iron concentric pole pieces; *LSM*, loud speaker magnet; *A*, copper ring armature 0·03 in. thick carried by copper shaft *S* running in ball-bearing *B*, rotates in annular air-gap; 1,2, connexion points for iron and constantan limbs of thermocouple (not shown); M_1, annular mercury contact ring for *A*, resting on copper ring *R* and connected to 1; M_2, mercury pool affording connexion between *S* and 2; L_1,L_2,L_3, insulating liners
Vertical anti-eddy current slots are provided in the armature *A*, slots not shown. Thermo element sizes; constantan, one piece *c.* 0·16 in. thick by 1 in. wide by *c.* 2 in. long; iron, 4 rods in parallel, *c.* 0·25 in. diam. × *c.* 4·2 in. long. Water cooling is incorporated but omitted from the drawing for clarity

Mrs E.K. Ralph.

Thermocouple Electric Motors.

Covering Note 22/10/62

Nature Sept 8 1962
pp 988-989.

This is the outcome of some work I did about 1947-'50 but let lie resting while I got on with my magnetic researches. However, some people in S. Africa, reference 1 in the attached reprint, made claims for their Electrostatic Motor & my research has at least 10 years earlier. I had not made a publication but had demonstrated to an Open Meeting of the Tyneside Soc. of Mech. & Expl. Engineers. Nature kindly published for me. Magnetic Work being semi-stationary because of lack of funds for field work, I carried the "unusual motor theme" a stage further by dreaming up the one described herewith.

This work does not mean my efforts in dating research will be in any way abated, as soon as I can get a patron but right now, we have a bit

A pilot model was made and ran satisfactorily; due to the voltage drop of normal brush gear being too high, mercury commutation was tried. This motor ran well, but considerable splashing of mercury occurred which was unsafe from the health angle. A totally enclosed design was adopted (Fig. 1). The motor was powered by a single massive thermocouple of iron-constantan.

The main particulars are (all resistances in μohms):

Motor: total copper resistance, *c.* 125; mercury contacts, *c.* 5; total, 130.

Thermocouple: total iron resistance, *c.* 130; constantan resistance, *c.* 390; total, 520.

Running: the motor just starts to run comfortably at about 100° C. hot junction temperature, say 4 mV. With a total circuit resistance of 650 μohms the current would be a little over 6 amp., representing frictional losses of about 0·025 W.

Output: with a hot junction of 700–800° C., E = *c.* 30 mV.; I = *c.* 46·5 amp.; power = 1·4 W.

Improvement: it would balance the design if the couple resistance were lowered to equal that of the motor. 4 thermocouples in parallel would do this. At 700°–800° C., as before, we might expect: E = *c.* 30 mV.; I = *c.* 115 amp.; power = a little less than $4\frac{1}{2}$ W.

A test stand incorporating a parabolic mirror is being made. It is hoped to make some trials using solar energy as the heating medium, when suitable weather comes along.

J. E. Crawford Stringer

Lincluden,
Preston Park,
North Shields,
Northumberland.

[1] Van Wyk, J. D. N., and Kühn, G. J., *Nature*, **192**, 649 (1961).
[2] Stringer, J. E. C., *Nature*, **193**, 264 (1962).

Printed in Great Britain by Fisher, Knight & Co., Ltd., St. Albans.

of a recession & no one has money to give. My own firm – we number about 6000 – have had to dispense with about 130 draughtsmen, which is awfully tough on them.

I am having a shot at learning Italian, to go with German & French, to help in the Common Market work. Also, much good archaeological work is published in Italian.

We had a wretched cold summer & the weather was too chilly for doing any trials with either Model 1 or Model 2 of the Thermal anomaly archaeological prospectors.

Then the body of our car nearly broke away from the chassis & there is awfully expensive re-building to do. Everything has been going all haywire.

I trust you are well & that the next news from you will be happier than mine. Thank you & colleagues for keeping me in the radio-carbon picture: you will understand that the cave project is abeyance until the car is a going concern again.

With all good wishes
Jack E. Crawford Stringer.

November 8, 1962

AIR MAIL

COPY

Dr. J. E. Crawford Stringer
Lincluden, Preston Park
North Shields
Northumberland
England

Dear Dr. Stringer:

Thank you very much for your letter and reprint. I was sorry to hear that you are having so many difficulties.

My stay in Italy last spring and summer was much longer than I had anticipated and, as a result, my days in England were brief and hectic. In our search for Sybaris we did not find the 6th century B.C. city, but we did find walls, etc. of the later Greek and Roman occupations. The instrument that functioned the best was the Oxford magnetometer, and we covered about 10 square kilometers of the plain with it. Part of the overlying deposit of clay there is highly magnetic (1.0×10^{-4} emu/cc as measured at Oxford) and most of the walls, etc. appeared as regions of low magnetism. We were able to detect some of these to depths of 5 meters. From the potsherd evidence, however, we believe that the 6th century B.C. city is buried under approximately 6 meters of earth.

In comparison, the work here now is quite dull with many reports to write, C-14 dates to summarize, and so forth.

Sincerely yours,

Elizabeth K. Ralph

EKR/deh

November 8, 1962

AIR MAIL

COPY

Dr. J. E. Crawford Stringer
Lincluden, Preston Park
North Shields
Northumberland
England

Dear Dr. Stringer:

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In comparison, the work here now is quite dull with many reports to write, C-14 dates to summarize, and so forth.

Sincerely yours,

Elizabeth K. Ralph

EKR/deh

arch
Techniques

October 26, 1960

Mr. and Mrs. Matthew W. Stirling
3311 Rowland Place, NW
Washington 8, D. C.

Dear Marian and Matt:

Many thanks, Marian, for your letter bringing me up to date on the Stirlings and the summer in Europe. I can well see how you didn't find time in Rome to talk with Larici, but I hope you are still interested in the Techniques business.

Our young Englishman, Linington, has been out in Texas, and we think he is set up to develop our new machine with the Texas Instruments Company. In the meantime he is setting up other machines here useful in analysis and identification, one thing called a back scatterer which is an atomic device for analyzing potscherds, so that the laboratory is finally being established.

If our plans go according to schedule, we may still load a lot of the equipment into an oil company truck and head for Mexico again in the late winter. It is just possible that the engineers of Texas Instruments will want to try some things out on a good site and why not Mexico again. Just as soon as this thing jells, I will shout to you, Matt, and see if we can repeat last winter.

Please give my very best to your kids. Ours are both off in school now and Pen and I are rattling around. We should have Matt up here again before long for television, and perhaps we can see you both again then.

Very best wishes,

Froelich Rainey

FR:bh

MRS. MATTHEW W. STIRLING
3311 ROWLAND PLACE, N. W.
WASHINGTON 8, D. C.

Oct. 11, 1960

Dear Fro:

Matt has gone down to the S.I. to talk to Riesenberg about an exhibit they are planning of his New Guinea material. He is also supposed to convince the powers that be that it will be O.K. to exhibit the figures complete with penis covers, which is worrying them????

We have been intending to write you a joint letter ever since returning. However, I am jogged by having seen Caroline Collins on Sunday. She said you asked them what had become of us.

We didn't visit your daughter and diggins in southern France because we became too interested in Spain, Morocco, Portugal. When we reached Altamira Caves, we had only a week left of our allotted time in that area. Matthew learned that all the top bull fighters were appearing at a fiesta in Valencia so we left northern Spain and headed due South again. I am a traditionalist and show my age, because I prefer Dominguín. Matthew and Ariana prefer Ordoñez. We saw 3 days of bull fights, including a comic show one night. It was fun. I blame this dedicated interest in bull fights on Y O U. Before Matthew's association with you, I couldn't drag him to a bull fight.

We tho't Santiago de Compostela charming.

August 12, 1968

Dr. Stuart Struever
Northwestern University
Archaeological Field Crew
Kampsville, Illinois

Dear Dr. Struever:

Beth Ralph returned today from instrument survey work in Maine and reports that the magnetometer isn't working quite up to par. This, coupled with the fact that time is fast running out this season, has prompted us to cancel our trip to your part of the country for this year. There is a very good probability that a trip will be made next year; if you're still interested, I'd suggest you write to Beth early next spring.

Sincerely,

Raymond Ring

NORTHWESTERN UNIVERSITY
EVANSTON, ILLINOIS 60201

DEPARTMENT OF ANTHROPOLOGY

August 7, 1968

Mr. Raymond Ring
Applied Science Center for Archeology
The University Museum
University of Pennsylvania
33rd and Spruce Streets
Philadelphia, Pennsylvania

Dear Mr. Ring,

I do recall our conversation at the University Museum last winter. We would very much like to have you carry out magnetometer survey work on the Macoupin site which we are currently excavating. Our excavations at Macoupin will continue through August 17th. It is a large Hopewell village containing innumerable subsurface features, particularly storage-refuse pits, earth ovens and post molds. There is a major soil variation between the two ridges on which the site is located. It might be interesting to contrast the magnetometer results on these two ridges within the Macoupin site.

Our laboratory and headquarters are at Kampsville, Illinois, ca. 60 miles north and slightly west of St. Louis. You can find the town on the Illinois River on any Illinois road map. We have a place to put you up and you can eat with us in our dining room.

We can plan to do flotation work while you are here.

Sincerely,

Stuart Struever

August 5, 1968

Dr. Stuart Struever
Department of Anthropology
Northwestern University
Evanston, Illinois 60201

Dear Dr. Struever:

You may recall me talking to you after your speech here at Penn last winter about the possibility of visiting your site this summer to observe the flotation technique first hand and possibly to do some magnetometer survey work in return. There is yet a remote possibility of this happening if you are still interested. Beth Ralph is now doing some instrument survey work on the Maine-Canada border. If the instruments are working well when she returns, two of us from here at the Applied Science Center will probably go to Michigan to survey for Dr. Charles Cleland. If you are still in the field, we would like to stop at least for a day or two at your site, either on our way out or back. If we go, we'll be leaving here on about August 13.

I'm sorry I have to be so vague, but if you think there is still a chance of our getting together, I'd appreciate it if you would let me know as soon as possible. Thank you.

Sincerely,

R R

COPY

10/16/51

Dear Dr. Suess,

I am in Chicago again at Dr. Libby's lab learning more about the C14 age det." process. I visited RCL last week. Your equipment seemed to be ~~well on~~ approaching completion and I have hopes that mine will ~~be completed~~ follow shortly thereafter. Yours isn't quite ready for testing so I know nothing yet about its operation.

I was wondering if you have found anything about the equipment that I should discuss with the RCL people while I am in Chicago. I like the screen-wall counter design with the O-rings, and the anti-coincidence circuit looks ~~satisfactory~~ good. I am not having a scale-of-two in my ~~equipment~~ circuit.

I hope your work is progressing satisfactorily.

Sincerely,
EKR

(Univ. of Pa. Physics Dept.)

January 4, 1966

Dr. Hans E. Suess
Scripps Institution of Oceanography
La Jolla, California

Dear Dr. Suess:

Your excellent article in the J. of Geophysical Research, v. 70 (Dec. 1, 1965) is of great interest to us. Congratulations too for the large quantity of good results you have obtained.

In order to compare your data with ours, I have two small questions to ask. On p. 5940 you have written "The values given in Tables 2 and 3 are normalized to an arbitrary N_0 value, approximately equivalent to the average C^{14} activity between A.D. 1860 and 1880." In the subsequent plot (Fig. 4) of C^{14} vs. true ages, should 100 years be added to the C^{14} ages or has this been corrected for? This becomes important when comparing the pronounced dip and peak around 1000 and 1100 B.C. respectively and others. Our recent measurements seem to be in agreement with yours, that is, if we are talking about the same ages.

The other question is of minor importance. Has the C^{13}/C^{12} correction been applied to the calculated ages of Fig. 4? With our system of calculation and bookkeeping, this involves a bit of extra work so that I am just wondering what practice other laboratories are following.

I have enclosed a reprint of our Date List VII with a few recent measurements added to Fig. 1.

With best regards,

EKR:pc

E. K. Ralph

August 30, 1972

Prof. Hans Suess
Dept. of Chemistry
University of California, San Diego
La Jolla, California 92037

Dear Prof. Suess:

Thank you for the schedule of Symposium No. 117. Both Henry Michael and I are sorry that we were unable to attend. If the proceedings are going to be published, would it be possible for us to obtain a copy?

Could I bother you with another question? From Walter Sullivan, who writes for the N.Y. Times, we have heard that a new dating technique based on the chemistry of amino acids is being developed at Scripps. Do you know about this, or could you let me know to whom to write?

Sorry to bother you with so many requests. I hope to see you in New Zealand.

Withe best regards,

Beth Ralph

BR/mm

UNIVERSITY of PENNSYLVANIA
PHILADELPHIA 19104

The Faculty of Arts and Sciences
DEPARTMENT OF PHYSICS

May 24, 1979

Mrs. Matthew C. Sullivan
Winterthur Museum
Winterthur, Delaware 19735

Dear Mrs. Sullivan:

In regard to the Ming Dynasty Saddle-Rug, I should like to say that the Harwell Laboratory does very reliable ^{14}C dating. However, from the information supplied, I do not know whether the ^{14}C date of A. P. 1530 to 1610 has been corrected on the basis of tree-ring dating or not (see enclosed MASCA Newsletter). In Fig. 1 one sees that the date falls on a small wiggle. However, in any case, I think that the true date would be within the tolerance of two standard deviations.

The close tolerance quoted is standard for well-run laboratories, and should cause no worry.

If you want more comments, please let me know.

Sincerely yours,

Elizabeth K. Ralph

EKR:ajm

Enclosure

The New York Times
TIMES SQUARE NEW YORK N Y 10036

March 19, 1970

Dr. Elizabeth K. Ralph
Museum Applied Sciemce Center for Archaeology
University Museum
33rd and Spruce Streets
Philadelphia, Pa. 19104

Dear Dr. Ralph,

Your letter of March 6 both dismayed and astonished me. I felt I had all but libelled the SEARCH group and ridiculed its arguments.

My story as published in all editions available to me here made the situation quite clear.

However I now think I have a clue as to the reason for your concern. The following passage appeared in my original draft but was not carried in any edition that I have seen:

"As a counterbalance /to the C-14 dates/ some participants in the project cite reports that the Madrid Institute of Forestry in Spain and Bordeaux University in France ascribed an age of 4,000 years to Mr. Navarra's original wood specimen.

"The dating method used by those two institutions could not be determined today, but it was reportedly not the radioactive carbon technique and some are skeptical of its reliability..."

I can only speculate that our compositors and makeup men, in closing up the earliest edition that goes to Philadelphia, dropped a part of this passage into the story. It must have read rather oddly.

The story that ran in other editions is enclosed.

Sincerely yours,

Walter Sullivan

cc: Dr. Froelich Rainey

April 15, 1968

Dr. N. Suntharalingan
Stein Research Building
Jefferson Medical College
Hutchinson Street
Philadelphia, Pennsylvania

Dear Dr. Suntharalingan:

Thank you very much for showing us your laboratories on Thursday.

I have enclosed some forms that have to be filled out by you in order to become a consultant in our NSF-GA-993 grant project. If you will return these and let me know what your salary is as soon as possible, I'll get this arranged in our office before I leave.

If there is any confusion after I leave, please contact Mr. Manuel Doxer. His telephone number is 594-8593.

Many thanks for your kind cooperation.

Sincerely yours,

Elizabeth K. Ralph

encl.

Please complete the following form and return same to the DEPARTMENT OF PHYSICS, 209 SOUTH 33RD STREET, UNIVERSITY OF PENNSYLVANIA, PHILA., PA. 19104

This information is needed to complete the necessary personnel forms for your appointment in the Department. This information is kept confidential. Kindly notify the Department Secretary of any changes that occur in this data.

Name SUNTHARALINGAM, NAGALINGAM.

Home Address Apt. D303 155 E- GODFREY AVE PHILADELPHIA PA 19120

Local Address → COLOMBO, CEYLON.

Telephone Number HA 4 - 5570

Date of Birth 18 JUNE 1933

Place of Birth JAFFNA. CEYLON

Marital Status MARRIED

Social Security Number 197 - 34 - 8433

Name of Next of Kin SIVA SUNTHARALINGAM

Degrees PH.D.

Type of Visa IMMIGRANT

Please complete attached W-4 form and return with above form.

NSF-GA 993

INSTRUCTIONS ON REVERSE SIDE

UNIVERSITY of PENNSYLVANIA

A-4 PERSONNEL ACTION FORM

SOCIAL SECURITY NUMBER		
197	34	3433

(INCOME TAX IDENTIFICATION NO.)

EFFECTIVE PAYROLL DATE		
6	15	66
MONTH	DAY	YEAR

(1) Name Suntharalingam Nagalingam (2) Mail Code:
LAST FIRST MIDDLE

(3) Home Department College--Physics 2E5 - DRL
SCHOOL AND DEPARTMENT ROOM AND BUILDING

(4) Nature of Action Appointment

COMPLETE THE FOLLOWING ONLY IF THIS IS AN ORIGINAL EMPLOYMENT ACTION OR IF THE INFORMATION HAS CHANGED.

(5) Home Address 2303, 155 E. Codfrey Ave., Philadelphia, Pennsylvania
STREET CITY STATE ZIP CODE

(6) Sex: Male ☐ Female ☐ (7) Birthdate: 6 | 13 | 33 (MONTH | DAY | YEAR)

(8) Marital Status: Single ☐ Married ☐ (9) Education Ph.D.

(10) Is employee a national of a foreign country? Yes ☐ No ☐
If yes, attach O.I.S. Notice of Appointment.

(11) Will the duties of this position be performed entirely outside Philadelphia city limits? Yes ☐ No ☐

(12) Student: Yes ☐ No ☐ If yes, complete and attach Pers. Form 14, Student and Fellowship Status Record.

For Personnel Dept. Use Only:

SOC. SEC. TAX	PHILA. WAGE TAX	FED. INC. TAX
None ☐ Std. ☐	None ☐ Std. ☐	None ☐ Std. ☐ Flat ☐ $

Country . Visa .

FROM

(13) POSITION TITLE: Title Code:

NAME OF BUDGET	POS. NO.	HR. RATE	CLASS	DEPT.	ACCT.	TYPE	FUND	BUD. TERM. DATE

TO

(14) POSITION TITLE: Research Specialist IV Title Code: 6690

NAME OF BUDGET	POS. NO.	HR. RATE	CLASS	DEPT.	ACCT.	TYPE	FUND	BUD. TERM. DATE
Physics Research	2	10.00	4	03134	6690		3	6/30/69

DEDUCT PAY or LEAVE OF ABSENCE *(Circle One)*

(15) Reason *(e.g., illness, absence, etc.)*

(16) If Leave of Absence: For Periods: LAST DAY WORKED To: EXPECTED DATE OF RETURN

(17) If Deduct Pay: Number of Days Give Dates

TERMINATION

(18) Reason for Termination

(19) Forwarding Address

Date: BUDGET ADMINISTRATOR APPROVAL (IF NECESSARY) PERSONNEL DEPT.

NSF-993

INSTRUCTIONS ON REVERSE SIDE

UNIVERSITY of PENNSYLVANIA

A-4 PERSONNEL ACTION FORM

SOCIAL SECURITY NUMBER		
197	34	3433

(INCOME TAX IDENTIFICATION NO.)

EFFECTIVE PAYROLL DATE		
7	10	69
MONTH	DAY	YEAR

(1) Name Suntharalingam Nagalingam (2) Mail Code:
LAST FIRST MIDDLE

(3) Home Department College--Physics 2E5 - DRL
SCHOOL AND DEPARTMENT ROOM AND BUILDING

(4) Nature of Action Termination

COMPLETE THE FOLLOWING ONLY IF THIS IS AN ORIGINAL EMPLOYMENT ACTION OR IF THE INFORMATION HAS CHANGED.

(5) Home Address
STREET CITY STATE ZIP CODE

(6) Sex: Male ☐ Female ☐ (7) Birthdate: (MONTH | DAY | YEAR)

(8) Marital Status: Single ☐ Married ☐ (9) Education

(10) Is employee a national of a foreign country? Yes ☐ No ☐
If yes, attach O.I.S. Notice of Appointment.

(11) Will the duties of this position be performed entirely outside Philadelphia city limits? Yes ☐ No ☐

(12) Student: Yes ☐ No ☐ If yes, complete and attach Pers. Form 14, Student and Fellowship Status Record.

For Personnel Dept. Use Only:

SOC. SEC. TAX	PHILA. WAGE TAX	FED. INC. TAX
None ☐ Std. ☐	None ☐ Std. ☐	None ☐ Std. ☐ Flat ☐ $

Country . Visa .

FROM

(13) POSITION TITLE: Research Specialist IV Title Code: 6690

NAME OF BUDGET	POS. NO.	HR. RATE	CLASS	DEPT.	ACCT.	TYPE	FUND	BUD. TERM. DATE
Physics Research	2	10.00	4	03134	6690	0		6/30/70

TO

(14) POSITION TITLE: Title Code:

NAME OF BUDGET	POS. NO.	HR. RATE	CLASS	DEPT.	ACCT.	TYPE	FUND	BUD. TERM. DATE

DEDUCT PAY or LEAVE OF ABSENCE *(Circle One)*

(15) Reason *(e.g., illness, absence, etc.)*

(16) If Leave of Absence: For Periods: LAST DAY WORKED To: EXPECTED DATE OF RETURN

(17) If Deduct Pay: Number of Days Give Dates

TERMINATION

(18) Reason for Termination Leaving the University

(19) Forwarding Address Apt. D-303, 155 E. Codfrey Avenue Philadelphia, Pennsylvania 19120

Date: 7/10/69 BUDGET ADMINISTRATOR APPROVAL (IF NECESSARY) PERSONNEL DEPT.