

February 1, 1961

Dr. Frederick Johnson
Robert S. Peabody for Archaeology
Phillips Academy
Andover, Mass.

Dear Dr. Johnson:

The weeks have slipped by too fast. Our instrument schedules and personal excursions with them are still vague. However, I think that I am going to play with the resistivity instrument and our new sonic device on the south Pacific coast of Guatemala at Mike Coe's site in early March.

If time permits and if a short side excursion on my part would be of any use to you, please let me know. I think that Mike Coe's headquarters address is Institute of Anthropology and History, Edificio #5, "La Aurora", Guatemala City.

Best of luck in the Tehuacan Valley.

Sincerely yours,

Beth Ralph

EKR/deh

November 29, 1961

Dr. Frederick Johnson
R.S. Peabody Foundation
Box 71
Andover, Mass.

Dear Dr. Johnson:

Many thanks for your call on Monday. Dr. Rainey was glad to hear that you and Dr. McNeish may use one of our instruments. Dr. Rainey has had more field experience with them than I have so far, and he thinks that the resistivity type would be helpful in discerning layers in your cave and possibly open sites.

We have three resistivity instruments and could schedule one of these for your use without any difficulty.

With best regards,

EKR/ic

C
O
P
Y

Heinrich Berlin

ROBERT S. PEABODY FOUNDATION FOR ARCHAEOLOGY
PHILLIPS ACADEMY
ANDOVER, MASSACHUSETTS

January 30, 1962

Dr. Elizabeth Ralph
University of Pennsylvania
Department of Physics
Philadelphia 4, Pennsylvania

Dear Beth:

After getting all excited about the possibility of using one of your instruments during the course of work in the Tehuacan Valley, time has slipped by and it seems now impossible to make any reasonable arrangements.

I expect to leave Boston on February 8. Between now and then, I can see little time to learn how to use one of these things.

I enjoyed your "Fact and Comment" in AMERICAN ANTIQUITY. If people will only read this carefully, there will be less irresponsible talk.

Cordially,



Frederick Johnson

FJ/tg

PRINCETON UNIVERSITY

PRINCETON, NEW JERSEY

Via Francesco Daverio 41
Roma, Italia

DEPARTMENT OF GEOLOGY

CABLE ADDRESS: GUYOT, PRINCETON, N.J.

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

Dear Beth:

It was very good to have your letter of February 21, although I must report that the fact that I was charged with the electrical resistivity gear came as a bit of a surprise. I thought the British had borrowed it. In any event it is safe, and as far as I can ascertain is sound. It resides at the British School where it has been since an abortive survey over a Roman Villa in October.

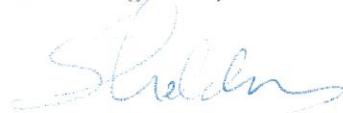
Michael Ballance, assistant director of the School, (Mr. Ward Perkins, Director, is still in England at the moment) reported by phone this evening that all seems in order. The battery has been removed. There are five poles, and lots of wire. You will need some clamps (the British call them Alligator clamps) to facilitate the changing of contacts. These clamps are the big ones with teeth. These were absent when the instrument was received and slowed things down a bit.

More specifically the instrument is certainly available whenever Dr. Rainey needs it. Would you please advise where and when you want it delivered. I shall be out of town during most of April. And I think it might safely stay at the British School where it now is. Or if you want it left at the Lerici Foundation that will be quite simple I am sure. In any event I shall await your pleasure.

As for my own work it goes on the ~~min~~ slow, hard, un-instrumented way --- by foot. Some progress I think. I report on some of it next month in lectures at Louvain, Liege and Ghent in Belgium. I must have something wound up by then I should think. I keep running into carbon now and again, but keep telling myself that pottery associated with it is more accurate than C-14. But then I am not so sure after talking with the archaeologists. Apparently the farther from Rome the more precise the dating of Roman pottery.

Trust all goes well with you and that bombs, international affairs and the like are not messing things up too much with your lab.

Very best regards,



Sheldon Judson

2 March, 1962.

March 7, 1962

AIR MAIL

Dr. Sheldon Judson
Via Francesco Daverio 41
Roma, Italia

Dear Sheldon:

C
O
P
Y

Many thanks for your letter. I can appreciate your surprise at my inquiry concerning the resistivity instrument. I should know by now that "arrangements" made by the boss are usually vague verbal affairs and provide clues only.

From my selfish point of view, it would be a great help if you could have the instrument, rods, and cables transferred to Mr. Lerici, Lerici Foundation, Via Veneto 108, Roma before April 1st. I plan to land in Rome on the 1st or 2nd, burdened with our new sonic device and a gradiometer. If all goes well with the customs clearance, I hope to proceed directly to Calabria.

Have been living in Philadelphia this winter, so I haven't seen J'Anne O'Neil recently, but hope to talk to her before I leave.

With best regards,

E. K. Ralph
C-14 Laboratory

EKR/deh

METROPOLITAN CHAPTER

NEW YORK STATE ARCHAEOLOGICAL ASSOCIATION

Ralph
Can you arrange
this?
Jro

PLEASE REPLY TO:

182 Maple Avenue
Sea Cliff, L.I.,
New York

Nov. 11 1963

Office of the Director
University Museum
University of Pennsylvania
Philadelphia, Penna.

ATT: Secretary to Dr. Froelich G. Rainey

Gentlemen:

During a short chat between Dr. Rainey and myself, following his talk to the dinner meeting of the Eastern States' Archaeological Federation, the Director offered to loan a Geohm to us. The purpose of our borrowing the equipment would be to evaluate its usefulness in several different types of sub-surface survey problems facing us.

It was impractical, under the circumstances, for us to make any arrangements at the meeting so I suggested this letter to the attention of his secretary.

I have since discussed the project with Mr. Leslie Sirkin of Adelphi University and Dr. Walter Newman of Queens College. The former is engaged in analyzing the post-glacial bogs on the Island while the latter is involved in sea-level research. They have agreed to test the Geohm with me by correlating its readings with the results of subsequent excavation or coring as the situation might dictate.

The tests would include mapping the separation between marl and peat in a bog; locating the alternate layers of sand and peat at a point that has been alternately swamp and beach as a result of fluctuating relative sea level; and the detection of shell middens of various volume and density.

I would have an electronics engineer handle the actual operation of the device to insure against its inadvertent misuse.

We will, of course, provide Dr. Rainey with a thorough report of our tests including copies of our field notes and individual evaluations as to the Geohm's utility from each of our viewpoints.

Please consider this letter to be a formal request to borrow a Geohm for the purposes outlined and under whatever arrangements Dr. Rainey feels best.

Please thank Dr. Rainey for his help,

Sincerely,

Edward Patterson
Edward D. Patterson
President

EDP:dep

2/10/2

*Notes for per man
Specimen
Other
transcript
own records
- record kept
date
rather
at 3:00 to
Inhabit
Treat with
containing*

plates for boom
speakers


other
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own vehicles

deep layers -
detect them
better than
upper

What it does
at 3m, and
inhomogeneous

Depend upon
velocity contrast

EDP:geb

President
Edward D. Patterson
Sincerely,


Please thank Dr. Rainey for his help.

ments Dr. Rainey feels best.

Please consider this letter to be a formal request to borrow
a Geohm for the purposes outlined and under whatever arrange-
ment you consider best.
Please consider this letter to be a formal request to borrow
equal evaluations as to the Geohm's utility from each of
our viewpoints.

We will, of course, provide Dr. Rainey with a thorough report
of our tests including copies of our field notes and indivi-
dual evaluations as to the Geohm's utility from each of
our viewpoints.

November 15, 1963

Dr. Edward D. Patterson
182 Maple Avenue
Sea Cliff
Long Island, New York

Dear Dr. Patterson:

Dr. Rainey has asked me to reply to your request for a Geohm. We shall be using Geoms in the field this weekend and will, therefore, check our three instruments, and then ship one to you on Monday. With it, we shall ship 4 cables and small rods, and a spare battery. Usually, we use rods that are larger than these - heavy to ship, but very easy to make - just ordinary (or stainless) steel rods one-half inch in diameter and either 3 feet or 1 meter (depending upon which scale you use) in length and pointed one end. These then serve as measuring rods as well as sturdy stakes which can be pounded firmly into the ground to ensure good contact. It is best to make 5 rods so that, if you are taking readings in lines, one can be placed in advance while the reading is being taken with 4 of them.

I have enclosed the circuit diagram of the Geohm, a set of operating instructions for a similar instrument (ones for the Geohm are pasted in lid), and accounts of miscellaneous survey procedures. The last are for geological prospecting. For archaeological searching, we usually run along in lines with the spacing between the rods equal to the depth (or slightly greater) at which we expect to find the buried features.

Sincerely yours,

Elizabeth K. Ralph

EKR:pc

METROPOLITAN CHAPTER

NEW YORK STATE ARCHAEOLOGICAL ASSOCIATION

PLEASE REPLY TO:

182 Maple Avenue
Sea Cliff, L.I., N.Y.

November 26th 1963

Elizabeth K. Ralph, Associate Director,
Applied Science Center for Archaeology
The University Museum
University of Pennsylvania
33rd and Spruce Streets
Philadelphia, 4, Pennsylvania

Dear Dr. Ralph:


Thank you for your nice letter of the 15th with which you enclosed pertinent data. Thanks, too, for letting us borrow the Geohm which arrived here safely on Saturday last.

The tragedy in Dallas on the 22nd precluded our setting up any trial until next week-end.

I note that it was but three days en routs here. By what date do you wish to have it in your hands and for how much should it be insured?

Thanks, again, for your help and please express our appreciation to Dr. Rainey for his.

Sincerely,



Edward D. Patterson
President

EDP:dcp

June 16, 1964

Mr. Edward D. Patterson
182 Maple Avenue
Sea Cliff, Long Island
New York

Dear Mr. Patterson:

Thank you very much for returning the Geohm by special delivery. It arrived in good condition. I regret that we had to call it back so suddenly.

If you did have an opportunity to use it, we should be happy to have a brief report of what success, if any, you had and at what site you used it.

Sincerely yours,

Elizabeth K. Ralph

EKR:pc

1966 INSTRUMENT REQUESTS

Cs Magnetometer

Europe

Italy

Sybaris

Siris

Metapontum

Gravina

Sele

Veio

April-June

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"

"

"

"

"

Greece

Helice

Katsaba, Crete

"

September

Israel

Mouth of Naaman River

Jelemie, Beth She'arim

June-July

"

British Isles

July

USA

W. of Boston (Prof. Stephen Williams)

August, 1 week

Penna.

J. Witthoft Indian Sites

July-August

Other (Dr. Rainey)

Alaska--Kenneth M. Rae (?)

Proton Magnetometer

Peru. E.A.E. Beer

Mexico- Edw. L. Lindquist (Utah)

Geohms

Penna. Witthoft (?)

Metal Detector T-10-X

Oklahoma Tyler Bastian

(Ship late May)

June

People available for surveys

Hugh Bergh June (?)

Dept. of Geology

~~Princeton~~ Princeton Univ.

Princeton. N.J. 609-452-4101

201-~~297-1254~~ (home) 924-2740

Ted Spickler summer (?)

3654 Middleton Avenue

Cincinnati 20, Ohio

January 7, 1966

Mr. John Witthoft
Pennsylvania State Museum
Harrisburg, Pennsylvania

Dear John,

Bernard Wailes mentioned that you are planning a big summer program of excavation at Indian sites in western Pennsylvania. I don't know whether or not you want instrument surveys, but I thought that I'd let you know about our plans.

We had very good success with the new Varián Associates' portable precision cesium magnetometer last fall in Italy. Therefore, this spring and summer we are going to act as agents for Varian Associates in conducting surveys with the new instrument. It is more sensitive and much faster to use than proton magnetometers. Since this is an experimental period and 2 prototypes only are available, the cost is rather high--\$3000 per month. This fee includes the rental of a cesium magnetometer and its use under the direction of a geophysicist. Two local assistants or students would also be required (not included in the fee).

If your sites are more suitable for the Geohm, of course, we could work on a basis similar to last summer.

With best regards,

E. K. Ralph

EKR/rs

PEABODY MUSEUM
OF
ARCHAEOLOGY AND ETHNOLOGY
HARVARD UNIVERSITY
CAMBRIDGE 38, MASSACHUSETTS, U.S.A.

January 16, 1966

Dr. Elizabeth K. Ralph, Associate Director
Applied Science Center for Archaeology
The University Museum
University of Pennsylvania
33rd and Spruce Streets
Philadelphia 4, Pennsylvania

Dear Dr. Ralph:

I have discussed the time schedule with Mrs. Dincauze and I find that she feels that July or August would be alright for the survey. I would think that a day or two would be sufficient for the area she is interested in and she feels that there are not too many modern obstacles around. I would then tentatively like to set up this survey, and I will immediately try to investigate the possibility of finding between three and five hundred dollars (\$300-\$500) for this project and I feel there is every likelihood of obtaining these funds. I should be able to give you a firm go-ahead with funds in hand by sometime in April. There will be plenty of student help for this project.

Don Brown has moved over to Boston University and I haven't seen him much this Fall.

Thank you for your continuing interest and I will be in touch with you again as soon as possible.

Sincerely,



Stephen Williams, Associate
Professor of Anthropology

SW/msa

January 7, 1966

Professor Stephen Williams
Department of Anthropology
Harvard University, Peabody Museum
Cambridge, Mass. 02138

Dear Professor Williams:

In regard to the magnetometer survey at Mrs. Dincauze's site west of Boston, I am writing to say that we should very much like to do it.

Instead of the proton magnetometer, we are now using the new Varian Associates' portable precision cesium magnetometer which is more sensitive and much faster to use. If there aren't too many obstacles, we could cover approximately 4 acres per day. About obstacles, I hope that there are not power lines, modern pipes, and too much other iron debris very near or above or below the site. Modern dumps are especially bad.

Because the instrument is new and prototypes only are available, we are working jointly with Varian Associates, more or less as their agent in conducting surveys. Unfortunately, during this experimental period, the cost is rather high--\$3000 per month or \$100 per day (plus travel expenses on a daily basis). This fee includes the rental of a cesium magnetometer and its use under the direction of a geophysicist. Two local assistants or students would also be needed for the survey.

The next problem is the time. We have various commitments in Italy and Greece from the end of March through June. Would July or possibly August be convenient for you?

Please give my best regards to Don Brown if you happen to see him.

Sincerely yours,

Elizabeth K. Ralph
Associate Director

EKR/rs

September 9, 1965

Mrs. R. F. Dincauze
109 Slade Street
Belmont, Massachusetts

Dear Mrs. Dincauze:

Thank you for your letter of September 7th. We have no set fees for instrument surveys. However, if you do have funds available, we would appreciate an allowance for expenses. The responsibilities are all our own.

Sincerely,

Elizabeth K. Ralph

EKR/mr

109 Slade Street
Belmont, Mass.
September 7, 1965

Dr. Elizabeth K. Ralph
Applied Science Center for Archaeology
University Museum
33rd and Spruce St.
Philadelphia, Pennsylvania

Dear Dr. Ralph,

Thank you for your reply to my inquiry about a proton magnetometer survey. There are no immediate plans for excavation; spring is an acceptable time for a survey.

Being unfamiliar with the terms under which such surveys are arranged, I would appreciate information on the costs and responsibilities involved.

Yours truly,



Dena M. F. Dincauze
(Mrs. R. F.)

HARVARD UNIVERSITY

DEPARTMENT OF ANTHROPOLOGY

*Peabody Museum
Cambridge, Massachusetts 02138*

December 30, 1965

Dr. Elizabeth K. Ralph
Applied Science Center for Archaeology
University Museum
33rd and Spruce Street
Philadelphia, Pennsylvania

Dear Dr. Ralph:

One of my students, Dena Dincauze, has been in correspondence with you about the possibility of a magnetometer survey of her site just west of Boston, and she has my strong support in this interest.

You mentioned that spring would be a convenient time for that survey, and I would like to inquire about the magnitude of expenses that would probably be incurred in making such a survey. The area to be covered is that of some few acres, and I realize that it would be difficult to give a precise estimate of cost. However, if I could find out the range of expense, say several hundred dollars or more, I would be in a better position to discover if such funds were presently available.

I hope that you will be able to make this survey this spring, and I know that many members of our archaeological staff would look forward to finding out more about this specialized technique.

Sincerely,



Stephen Williams
Associate Professor
of Anthropology

SW:mim

109 Slade Street
Belmont, Mass.
August 18, 1965

Dr. Elizabeth K. Ralph
Applied Science Center for Archaeology
University Museum
33rd and Spruce St.
Philadelphia, Pa.

Dear Dr. Ralph,

Dr. Robert Dyson has suggested that I write to you, with a problem in archaeological site testing. I am interested in the possibility of a proton magnetometer survey of a site here in Massachusetts.

The site as now known consists of a single cremation burial pit uncovered by a bulldozer. On the basis of experience with other pits of this type, the expectation is that the single pit is a unit of a cemetery, and others should be nearby. The subsoil is deep, structureless, fine-grained sand with a thin podzol soil development; there are no surface indications of intrusions. The dense, greasy, burned, artifact-rich pit fill contrasts strongly with the subsoil. Thirty-six test pits in the area of the exposed grave have revealed no others, but there remains a large expanse of the sandy knoll to be probed. The situation seems to present an ideal opportunity for a proton magnetometer survey.

Would you recommend such a survey? Harvard University, where I am a graduate student in the Anthropology Department, has no instrument. Dr. Stephen Williams, my advisor, supports my inquiring of you whether arrangements could be made to obtain the equipment and an operator from your laboratory. It would appear that the performance of the magnetometer under these conditions would be of more than immediate interest.

Thank you for your attention.

Yours truly,

Dena M. Dincauze

Dena M. F. Dincauze
(Mrs. R. F.)

Quito, Febrero 4 de 1966.-

ASCA

Sr. Dr. Dn.
Froelich G. Rainey,
Director of University Museum.-
University of Pennsylvania.-
Philadelphia, Pennsylvania.-
U.S.A.

Muy estimado doctor:

El suscrito Ing. Virgilio S. Vélez C., de Ecuador, S.A., escribió a "Hablemos, Magazine" de New York, interesado por un artículo publicado en "El Comercio" de Quito-Ecuador, el 5 de Diciembre del año pasado, que titulaba "Aquí está Sibarís", en el que entre otras cosas, se hacía saber que Ud, había empleado en las investigaciones Arquelógicas realizadas para este objeto, un aparato denominado "Magnetómetro de Rubidio", que para su concepto, es al momento, el más completo aparato, para poder determinar ruinas, templos, casas, ~~casas~~ enterradas bajo tierra, el mismo que dá determinaciones precisas y asombrosas.-

Yo tengo justamente una concesión arquelógica en mi país, para la misma que tengo necesidad imprescindible de la intervención de un Arqueólogo, y posiblemente, de la utilización de algunos aparatos de exploración Geofísica, entre los cuales me gustaría emplear, éste Magnetómetro de Rubidio.-

Dr. Froelich, me interesaría saber: ¿Qué casas están produciendo éstos aparatos para la venta?, y cuales son sus costos en dólares, para poder dirigirme personalmente a ellas; También desearía saber señor doctor, si Ud, estaría dispuesto a ayudarme, en éstas investigaciones que me propongo, sobre las cuales, se consideran, como las más ricas, e interesantes, zonas arquelógicas de América del Sur, en la Costa del Pacífico, y de las cuales, existen ya, bastante literatura, tanto en español, como también en Inglés.-

La zona, sobre la cual, tengo la concesión, se denomina "La Tolita", situada en la parte Norte de la Provincia de Esmeraldas, en mi país.-

En caso de interesarle, podría enviarle, algo de esa literatura, la misma que debe existir en el Museum de Nueva York y Washington, a cuyos Museos, se han vendido muchas interesantes piezas en oro, como también en Cerámica.-

También quisiera su opinión, sobre los más interesantes aparatos de Prospección Geofísica, tanto electrónicos, como Magnéticos, sobre tales investigaciones; como también en lo que se llama en inglés "Buried Treasures", que en estas Repúblicas Latino Americanas, existen por todas partes.-

En espera de sus gratas comunicaciones, me es grato suscribirme, como su afectísimo amigo y seguro servidor.-


Ing. Virgilio S. Vélez C.-

Dirección: Calle Quitus No. 701 y Cacha, (La Magdalena).- Quito-Ecuador.-S.A.

Translation 2/21/66

Quito, February 4, 1966

Dr. Froelich G. Rainey
Director, University Museum
University of Pennsylvania
Philadelphia, Pennsylvania
U.S.A.

Dear Dr.:

The undersigned Eng. Virgilio S. Velez C., of Ecuador, South America, wrote to "Hablemos, Magazine" (Lets Talk Magazine) of New York, interested in an article published in "El Comercio" of Quito, Ecuador, the 5th of December past, entitled "Here is Sybaris", in which, among other things, it was made known that you used in your archaeological investigations an apparatus called "Magnetometro" de Rubidio" which at the moment, in your estimation, is the most complete apparatus for determining ruins, temples, houses buried under ground, which gives precise and amazing results.

I have an archaeological concession in my country, for which I have the essential (indispensable) need of the intervention of an archaeologist, and possibly, of the use of some exploration geographic apparatus, among which I would like to use this Magnetometro de Rubidio.

Dr. Froelich, I would like to know: What houses are making these apparatus for sale?, and what are the prices in dollars, so that I might personally contact them. I would also like to know, Dr., if you would be willing to help me in these proposed investigations, which are considered the richest, and most interesting archaeological zones of South America, on the Pacific Coast, and of which there already exists a lot of literature in Spanish as well as in English.

The zone over which I have the concession is called "La Tolita" located to the north of the Province of Esmeraldas, in my country.

In case you are interested I could send you some of the literature, the same as should be in the New York and Washington Museum, to these museums many interesting pieces of gold, as well as ceramics have been sold.

I would also like your opinion on the most interesting apparatus for geographic prospecting, electric and magnetic, on such investigations, as well as what is known in English as "Buried Treasures", which in these Latin American countries exist all around.

Awaiting your kind reply, I am,

Eng. Virgilio S. Velez C.

Address: Calle Quitus No.701 y Cacha (La Magdalena)
Quito, Ecuador
South America

Translation

Marzo 2, 1966

Ing. Virgilio S. Velez C.
Calle Quitus No.701 y Cacha(La Magdalena)
Quito, Ecuador
South America

Estimado Ing. Velez:

El Dr. Rainey me ha pedido que conteste a su carta de fecha 4 de Febrero con referencia a investigaciones arqueológicas.

Estamos ahora usando un nuevo cesio magnetometro portátil de precisión que fué diseñado especialmente para nosotros por Varian Associates en Palo Alto, California. Solamente dos prototipos han sido construidos así es que todavía no están listos para la venta. Mientras tanto, estamos actuando como agentes de Varian conduciendo agrimensura arqueológica con ellos. Este nuevo instrumento fué hecho como resultado de experimentos con el rubidium magnetometer y es mucho mas portátil y puntual (de mas confianza) para nuestros propósitos.

Ya que es nuevo y el costo de desarrollo alto, tenemos que cobrar \$3,000 al mes por el uso. Este costo incluye la alquilada de un instrumento y los servicios y gastos de un geo-físico. Dos asistentes mas son requeridos en el local para ayudar con el trabajo.

Para experimentos eléctricos o de resistividad, hay un pequeño instrumento obtenible llamado Geohin. Es manufacturado por el Gossen Co., Erlangen, West Germany (Alemania) y vendido en los Estados Unidos por National Electronics, Box 1237, Sheridan, Wyoming. Cuesta como \$100.00

Hay muchos detectores de metal publicados como siendo a propósitos para encontrar tesoros enterrados, pero todos tienen muy limitada penetración de profundidad. Si el objeto metálico no es muy grande, no puede ser detectado con estos a más de como 1 pie de profundidad. Una de estas unidades es el tipo T-10-x Metal Detector hecho por Fisher Research Laboratory, Inc.; 1975 University Ave., Palo Alto, California. Cuesta como \$130.00

Ing. Virgilio S. Velez C.

Marzo 2, 1966

Nuestro especialista en arqueología Sur Americana es el Dr. Alfred Kidder II. El está ahorita de viaje, pero le enseñaré su carta en cuanto regrese.

Sinceramente,

Alizabeth K. Ralph

EKR:lm

Translate

ASCA
2/25/66

Dear Eng. Velez

Dr. Rainey has asked me to reply to your letter of February 4th about archaeological prospecting.

We are now using a new precision portable cesium magnetometer which was designed especially for us by Varian Associates in Palo Alto, California. Only two prototypes have been built so that they are not yet ready to be sold. In the meantime we are acting as agents for Varian in conducting archaeological surveys ^{with them.} This new instrument was developed as a result of tests made with the rubidium magnetometer & it is much more portable & reliable for our purposes.

Since it is new & development costs are high, we have to charge \$3000 per month for its use. This fee includes the rental of an instrument & the services & expenses of a geophysicist. At the site two ^{other} assistants are required to help with the work.

For electric or resistivity surveying, there is a small inexpensive instrument available called a "Geshim".

~~Archaeology~~
~~Geology~~

It is manufactured by the Gossen Co., Erlangen, West Germany and sold in the U.S.A. by National Electronics, Box 1237, Sheridan, Wyoming. It costs about \$100.

There are many metal detectors that are advertised as being suitable for finding "Buried Treasures", but they all have very limited depth penetration. If a metal object is not extremely large, it can not be detected with these below about 1 foot. One of these units is Type T-10-X Metal Detector made by Fisher Research Laboratory, Inc; 1975 University Ave., Palo Alto, California. It costs about \$130.

Our specialist in South American archaeology is Dr. Alfred Kidder II. He is now away, but I shall show him your letter as soon as he returns.

Sincerely yours,

Elizabeth K. Balpal

February 19, 1966

Mr. Edward L. Lindquist
711 W. Center Street
Provo, Utah

Dear Mr. Lindquist:

In reply to your letter of February 15th (and yours of February 5th to Dr. Rainey), the Elsec proton magnetometer is manufactured by the Littlemore Scientific Engineering Co., Railway Lane, Oxford, England. The cost in the U.S.A. is about \$3000. The best reference on the subject is in Physics and Archaeology by M. J. Aitken (Interscience Publishers, 1961, \$6.50).

With our proton magnetometer, we have done a number of surveys for other organizations, and have occasionally loaned it to other people. Our experience has been, however, that unless the survey is conducted by a geophysicist or someone who has had extensive experience under the direction of a physical scientist, that the survey is rarely carried to completion.

I suggest, therefore, that if you want to do a survey in Mexico that we send a geophysicist along with the instrument. The cost would include salary of the geophysicist (somewhere between \$500 to \$1000 per month), round-trip air fare, and living expenses. Either you or an additional assistant would be required to assist with the work.

Whether or not we would have a trained person available is another problem and would depend in large part upon when you plan to do the survey. We should also need some information about the site before hand to determine the appropriateness of a proton magnetometer survey.

Sincerely yours,

Elizabeth K. Ralph

EKR:mhr

February 15, 1966

Miss E. K. Ralph
University Museum
33rd and Spruce Streets
Philadelphia 4, Pa.

Dear Madam:

Through personal correspondence with Dr. M. J. Aitken, I discovered that your institute has used the proton magnetometer extensively in this country as well as in Italy.

I am extremely interested in this instrument for possible work in Mexico and also for my master thesis at the Brigham Young University. Could you please send me information concerning where this instrument can be purchased or rented and the costs involved, the use of it, and the training available.

Thank you very much.

Sincerely yours,

Edward L. Lindquist
Edward L. Lindquist *kl*

ELL:kl

711 W. Center St.
Provo, Utah
84601

ASCA

February 5, 1966

Applied Science Center for Archaeology
The University Museum
University of Pennsylvania
33rd and Spruce Streets
Philadelphia, Pennsylvania 19104

Physics &
Archaeology

Dear Dr. Rainey:

I read the article in the Masca Newsletter, Volume I, No. 2, December, 1965, on "Archaeological Prospecting." I found this article very interesting and, subsequently, would like to obtain more information about this methodology.

I would appreciate any material, especially concerning cost, that you could send me. I would also like to request a favor. Could you reply promptly so that it will be possible for me to submit my findings to the Department of Archaeology, Brigham Young University, before the budget deadline?

Thank you for your consideration.

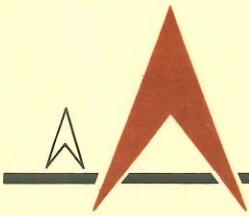
Sincerely yours,

Edward L. Lindquist
E.L.

Edward L. Lindquist

ELL:kl

Provo,
Utah
84601



**GREAT PLAINS
HISTORICAL
ASSOCIATION**

AT THE MUSEUM OF THE GREAT PLAINS • P. O. BOX 1122
LAWTON, OKLAHOMA 73502

16 Feb 66

Dr. Elizabeth K. Ralph
Applied Science Center for Archaeology
The University Museum
33rd and Spruce Streets
Philadelphia 4, Pennsylvania

Dear Dr. Ralph:

Thank you for your letter of 7 Dec 65 in regard to the T-10-X Fisher metal detector which you have available for loan. Although we have completed our first phase of field work, Dr. Bell and I expect to return to the field in June of this year. We would like to borrow the detector for use in June. Please inform us if it will be available, how long we may use it, and if this letter will serve as a formal request for use of the instrument. I would suggest that it be shipped to me in late May.

Sincerely,

Tyler Bastian

Tyler Bastian

March 10, 1966

Dr. Tyler Bastian
Museum of the Great Plains
P. O. Box 1122
Lawton, Oklahoma 73502

Dear Dr. Bastian:

As requested in your letter of February 16th, we are planning to ship the Fisher T-10 metal detector to you in late May. If we do not have other requests for it, you may keep it as long as you need it.

The instruction book is lost and if the company can't furnish a new one as we have requested, this is how it works:

Plug in ear-phone jack-->this turns it on.

With detector head not over metal, adjust knob to obtain a null, or no sound, then set it slightly off zero in the black region of the meter scale.

Move detector head over objects sought and keep head at same height above ground as that at which you balanced it. When sound is louder and meter needle advances, there may be some metal under the detector head, that is, an anomaly.

Depth of penetration is not much greater than diameter of the head except for great masses of metal. It is more sensitive to ferrous than non-ferrous metals. Objects much smaller than the detector head diameter will probably not be detected.

The batteries are now O.K., but if you get no sound or meter reading, that is probably an indication that they should be replaced.

Good luck with it.

Sincerely yours,

Elizabeth K. Ralph

EKR:mhr

THE CORNING MUSEUM OF GLASS/ UNIVERSITY OF MISSOURI EXPEDITION IN ISRAEL

c/o Department of Antiquities, P.O.B. 586
Jerusalem, Israel

*Rec'd
AS*

Corning-Missouri Expedition
Library 4D 11
University of Missouri
Columbia, Missouri 65201

Corning-Missouri Expedition
The Corning Museum of Glass
Corning Glass Center
Corning, New York 14830

Corning, New York
March 11, 1966

Dr. Froelich G. Rainey
Director, University Museum
University of Pennsylvania
Third and Spruce Sts.
Philadelphia, Pa.

Dear Dr. Rainey:

Enclosed you will find some press releases and photographs which describe the work we have done during the past two summers in Israel. I thought you might like to look through them.

I wrote Mr. Morrison and Mr. O'Brien today to give them some information on the work we plan to do at the Belus River this summer. I hope it will prove possible to include the magnetic survey. The more I think about it, the more enthusiastic I become.

With best wishes, I am

Sincerely,

Bob Brill

Robert H. Brill
Administrator, Scientific Research

RHB:w
Enclosures

October 13, 1966

Techniques

Dear Dr. Lyford:

Thank you for your kind letter of October 13rd and for the interesting suggestions for other applications of our prospecting instruments.

We do not know of any soil scientists or geomorphologists who have used the new instruments which we described, especially the cesium magnetometer, for soil studies. Last winter tests were made for possible military applications of the magnetometer, but other than that, it has been used so far primarily for archaeological prospecting. The sensors, either cesium or rubidium, with more elaborate and less portable detection apparatus, have been used by Varian Associates and various collaborators for a variety of more basic geophysical studies.

Tests of other instruments in your fields of interest may have been performed of which we are not aware. One possible source of information is "Proceedings of the IVth Symposium on the Remote Sensing of Environment", held at the University of Michigan in April 1966. This was just published last week and we have not yet received a copy.

Your suggestion of a trial at the Harvard Forest appeals to us very much. Perhaps it could be arranged for a weekend in the near future before the weather is too cold. We are a bit confused about "Harvard Forests"; is the one you suggested for a trial in Massachusetts or New Brunswick?

Most sincerely,

Froelich Rainey
Director

Dr. Walter H. Lyford, Soil Scientist
Harvard University
Harvard Forest
Petersham, Mass. 01366

HARVARD UNIVERSITY
HARVARD FOREST
PETERSHAM, MASSACHUSETTS
01366



3 October 1966

*Ralph
let's see
it's fine
you & I
write?
Fro*

Dr. Froelich Rainey
Prof. of Anthropology
University of Pennsylvania
Philadelphia, Pa. 19104

Dear Prof. Rainey

Congratulations to you and Miss Ralph on the paper Archaeology and New Technology in the 23 Sept. issue of Science. For several years I've seen occasional references in the New York Times to your work with these new devices and have almost written a couple of times to get information.

For years I've had as an ideal for the soil mapper some sort of device one could strap on that would ring bells or move needles as one walked over the landscape. I knew this approach would never come from the men who came into the soils field from geology or agronomy and I had rather guessed the soil engineers might be the innovators because of their strong physics background. Somehow I never guessed the innovations would come from archaeology or anthropology. My own scholastic background was in chemical engineering but I came up through the soil classification mapping field by 23 years in Government and Experiment Station work and since coming here have been in soil dynamics, morphology and biology.

During the last several years I have become acquainted with Fred Johnson and Douglas Byers and visited the Debert site in Nova Scotia and a couple sites on Cape Cod. Slowly and rather reluctantly I have concluded that archaeologists look at the soil in much greater detail than soil scientists, and they have given soil scientists more than they have received in return. Certainly archaeologists have given soils people about the only means of dating the rate of soil development. Soil science can be of more help than it now is and the major drawback right now seems to be a sort of language barrier. While at Debert I had a chance to discuss this with several trained archaeologists and found they had never had an opportunity to study processes of

soil development. They seemed to be fascinated by the things I saw in the soil. In part, because of this I lead a seminar on this subject last spring in the Dept. of Geological Sciences aimed particularly at those who did not wish to specialize in soils but wished to have some soil information as a tool. So far as I know this is the only course devoted solely to soils ever given at Harvard and so of course the archaeology students had no opportunity before. This same is probably true elsewhere because the strongest soils courses generally are at Land Grant Colleges and are given a strong agronomic bias. Furthermore most of the soils textbooks also have the same bias.

Now, back to your new technology. Do you know whether any soil scientists or geomorphologists are using your devices for other than archaeological investigations? I'm not sure of the limitations of your instruments, but it seems to me they could be used profitably to study many soil features such as the presence of fragipans, buried boulders or other rather distinct density gradients in soils, whether of pedogenic or geogenic origin. For example a soil feature I have paid especial attention to here at the Harvard Forest, in New Brunswick, Canada; and this past summer in Sweden, is the marked influence of wind throw of trees on the character of the soil. The pronounced microrelief resulting from wind throw is destroyed when the forest is cleared and the soil repeatedly cultivated but the soil "remembers" the microrelief -- by irregularities in the B horizon below plow depth -- by concentration of coarse fragments in the bottom of former pits -- by inversion of B horizons -- by localization of organic matter -- and in other ways. In fact the pattern shown in your Figure 6 reminded me of patterns of wind throw mounds I have made.

Your new technology offers as many promises for non-archaeological purposes that I hope these will not be overlooked. Hopefully soil scientists and geomorphologists will rush to take advantage of your work, but perhaps they won't because of non-availability of equipment or other reasons. Here at the Harvard Forest we have 100 foot grids on several different tracts and have a good deal of soil and geomorphology information available. It occurred to me that this might be a good place to rather rapidly test your instruments to see if they have promise in other directions. If either you or Miss Ralph or any of your associates would care to try out your devices here I'd be glad to point out some likely places for your exclusive study. Our soils and surficial deposits are representative of large areas in eastern North America and a one-stop-shot might give you a rather confident notion of the applicability to non-archaeological purposes.

Yours very truly,

Walter H Lyford

Walter H. Lyford
Soil Scientist

William A. Barrett

755 TINTON AVENUE

NEW SHREWSBURY, NEW JERSEY 07724

December 3, 1967

Miss Elizabeth Ralph,
Applied Science Laboratory,
University of Pennsylvania
Philadelphia, Pa. 19104

Dear Miss Ralph,

Mr. Richard Stillwell of the Archaeological Institute of America has suggested that you might be able to give us some helpful advice.

Trinity Episcopal Church, Red Bank, N.J., owns a cemetery in Middletown Township of approximately two acres. The land was donated to the Church in 1865 and the last known burial was in 1916.

Unfortunately, we have been unable to find any records of the sale of plots or the locations of unmarked graves.

Mr. Stillwell has recommended our asking you if you might possibly suggest methods by which unmarked graves might be located. If so, we would be most grateful for your advice.

Very truly yours,
William A. Barrett

December 6, 1967

Mr. William A. Barrett
755 Tinton Avenue
New Shrewsbury, New Jersey 07724

Dear Mr. Barrett:

In regard to locating unmarked graves, it is possible that they could be found with a magnetometer if the area is not cluttered with modern disturbances. By these, I mean that there may not be massive iron or brick structures nor power or telephone lines nearby and not many scraps of iron such as 'tin' cans, etc., on or near the surface of the ground.

The next problem would be for us to find the time to do a survey at the site. I think that we could be reasonably certain of doing it in August, 1968, but cannot promise now to do it any sooner.

I shall wait to hear from you in regard to the modern disturbances. If you could send me a photograph of the area to be searched, that would be very helpful.

Sincerely yours,

Elizabeth K. Ralph

EKR/abn

UNIVERSITY OF THE WEST INDIES

DEPARTMENT OF PHYSICS

CABLE AND TELEGRAPH

"UNIVERSITY"

PHONE P.B.X. 76661



OUR REFERENCE

MONA, KINGSTON 7,
JAMAICA, W.I.

8th December, 1967.

*Ralph
ASCA*

Dr. Froelich Rainey,
University Museum,
University of Pennsylvania,
Philladelphia,
Pennsylvania, U.S.A.

Dear Dr. Rainey,

We are interested in assisting the local archaeologists in Jamaica with a proposed magnetic survey of an archaeological site. They have approached us for advice concerning appropriate magnetometers, their sensitivity and their suitability here in the West Indies. We understand that you have had some experience in this field and as we have no such experience I wonder whether you could perhaps advise us on suitable equipment and suppliers of the most recent equipment. In particular we understand that considerable work has been done using proton resonance magnetometers. We also believe that flux-gate magnetometers are also available for this work, although we know of no work using them.

We should be very grateful for your opinion of the comparative advantages of the two types of equipment.

My apologies for troubling you, and we should be most grateful for a reply by air mail as there is considerable pressure to start the project at the earliest possible opportunity.

Yours sincerely,

Raymond Wright

R. W. H. Wright
Professor of Physics.

BY AIR MAIL
PAR AVION
AIR LETTER
AÉROGRAMME



..... Dr. Froelich Rainey,
..... University Museum,
..... University of Pennsylvania,
..... Philadelphia,
..... Pennsylvania, U.S.A.

First fold here

Second fold here

Sender's name and address: Professor R. W. H. Wright,
..... U. W. I. Jamaica
.....

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

THE 'APSLEY' AIR LETTER

Form approved by Postmaster General No.—71995/1Y

To open cut here

December 14, 1967

Dr. R.W.H. Wright
Department of Physics
University of the West Indies
Mona, Kingston 7,
Jamaica, West Indies

Dear Prof. Wright,

Dr. Rainey has asked me to reply to your letter of December 8th in regard to magnetic surveying at an archaeological site.

In answer to your questions, I have enclosed a preprint of a chapter written for a Guidebook entitled "Geophysical Surveying Techniques in Archaeology." In brief, we have preferred proton magnetometers to fluxgate types, but are now using the more recently developed alkali vapor magnetometers. These have greater sensitivity and are more rapid to use, also more expensive.

I have enclosed some recent literature from Varian Associates in which the newest and less expensive cesium magnetometer is described.

Sincerely yours,

Elizabeth K. Ralph

EKR/abn

Ray

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48823

THE MUSEUM

January 17, 1968

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

Dear Beth:

I am still interested in your instrument survey on some of our sites. We will have several projects during the summer in which I think you will be interested, however, our schedule is not yet firm.

Would it be too much to ask that you write towards the middle of May so that we can arrange time and place.

Please give
~~xerox~~ to Ray Ring &
you & he remember to
write in May

Best regards,

Chuck

Charles E. Cleland
Curator of Anthropology

CEC:jmm

I suggested that we come
in July in previous letter.
EKR

Charles E. Cleland
The Museum
Michigan State University
East Lansing, Michigan

46
6/4/68

Dear Dr. Cleland:

~~Since Beth Ralph is presently in Iran, I am writing about the instrument survey which you were interested in which you were interested. Unfortunately, I haven't~~

Beth Ralph is now in ~~Iran~~ Greece and asked me to write you about the instrument survey ~~that~~ in which you were interested. Unfortunately, when Beth left she wasn't sure whether or not we'd be able to make it to Michigan this summer. Much depends on exactly when she returns from overseas ^(we tentatively expect her back about the first week of July) and whether or not money for the trip will be available. ~~We now expect her back some about the first week of July.~~
~~If we it turns out that we can still make~~

Are you still interested if it turns out that we can make the trip? If so, when would be the best time for you and how much would you have for us to do? I'd appreciate it if you could let us know when ^{would be} the best time for ~~us to come,~~ and any other pertinent information ~~how much there will be to do, etc.~~ If we know have some idea

If we
~~Id~~ like to have some idea where we stand,
~~no~~ plans could can be made more easily
and quickly when Beth returns. I'm
sorry I can't be more definite ~~at~~ ~~about~~ ~~the~~
from this end at this time. ~~I'm~~

Sincerely
Raymond King

THE MUSEUM

June 7, 1968

Mr. Raymond King
Applied Science Center of Archaeology
The University Museum
University of Pennsylvania
33rd and Spruce Streets
Philadelphia 4, Pennsylvania

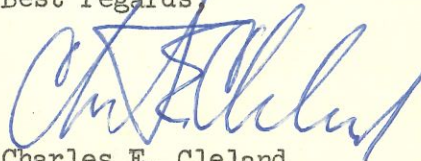
Dear Mr. King:

Thanks for your letter concerning Beth Ralph's long planned visit. We've had a situation come up just recently at Fort Michilimackinac in which an instrument survey would really be of tremendous help. As a result, we are extremely interested in having Beth visit Mackinaw City during the summer. A crew, directed by Jim Brown, will be at Michilimackinac from June 17th to August 23rd. If it is at all possible for Beth to come to Michigan, would you please have her call James Brown in Mackinaw City, Michigan. If she can't reach him at the field headquarters, have her call Fort Michilimackinac and leave a message for him.

I certainly hope that we can work out something this summer and I hope that you will communicate our willingness to Beth.

Henry Borstling
595-2391
(595-2960)

Best regards



Charles E. Cleland
Curator of Anthropology

CEC:jmm

James Brown can be
reached (eventually) by calling
-436-5423 ; no. of Ft. Mich.

Fort is just off interstate
in Mackinac City; Info. on
whereabouts of crew can be
gotten at gate,

Will be there until Aug 23

THE UNIVERSITY OF CHICAGO

CHICAGO • ILLINOIS 60637

THE ORIENTAL INSTITUTE

Cables: ORINST CHICAGO

1155 EAST FIFTY-EIGHTH STREET

17 January 1968

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

Dear Miss Ralph:

For a number of years I have had in the back of my mind a possible archaeological application for magnetometers without having access to equipment or advice with which to pursue the matter further. Basically, it concerns the work in the Middle East on which I have been periodically engaged for more than a decade, involving the tracing of ancient settlement patterns and the reconstruction of the major watercourses assumed to have connected them. For relatively recent periods, since roughly the time of Christ, the positions of at least the more important watercourses usually can be identified at once from the levees of alluvial material which survive them. Older levees, on the other hand, usually are impossible to trace directly from the surface; the assumption is that they have been degraded by sheet erosion and then gradually buried as the process of alluviation has continued.

Now the approximate position of at least the major older river channels can be fixed on the--surely reasonable--assumption that the lines of ancient settlement which can be traced empirically for particular periods must lie more or less along their banks. But this leaves no apparent possibility of defining the channels more precisely without unreasonably time-consuming and expensive programs of sectioning and test-pitting. Were we able to know something in detail about meander patterns, for example, we might be in a position to make further progress on the knotty question of the degree to which originally natural stream regimes had been straightened, diked and otherwise altered in the course of the development of irrigation systems.

Here is where the magnetometer conceivably might play a part. Granting that the entire alluvial plain is composed of silts of varying degrees of fineness, the coarse-textured deposits are closely aligned with the beds and banks of the major channels while those with progressively finer particle size lie along the irrigated levee back-slopes and seasonally flooded depressions. The sequence is obscured by variable rates of deposition, both in different periods and as one moves away from the main channels, but it is also at least conceivable that some of the smaller ancient canal branches could be detected and followed. If so, this would permit a wholly new kind of understanding of the ecological base of early civilizations.

stratigraphic

This speculative line of reasoning leads me to ask several specific questions. Is there any basis for hoping that variations in particle size would produce magnetic anomalies that might be detected? To what depth might

Miss Elizabeth K. Ralph

-2-

17 January 1968

such anomalies be detected with currently available equipment? Would the presence of saline ground water, particularly in presently irrigated zones, be a deterrent to such an undertaking? Is the Varian cesium magnetometer, with which I gather from the MASCA Newsletter you have specialized, the most appropriate type for the kind of thing I have in mind? What is the approximate cost, and what are the problems in learning how to use one in the field? Is there any other approach to this problem which you believe might be more promising?

Needless to say, I am embarrassed about approaching you with these time-consuming and possibly naive queries. But they have a direct bearing on a project I might undertake for some years beginning next fall, and I simply do not know to whom else I might turn for authoritative information. I would be more than grateful for any help whatever you are able to give me.

Sincerely,



Robert McC. Adams
Director

RMCA:mb

William A. Barrett

755 TINTON AVENUE

NEW SHREWSBURY, NEW JERSEY 07724

January 19, 1968

Miss Elizabeth K. Ralph
Museum Applied Science Center
for Archaeology
The University Museum
University of Pennsylvania
33rd + Spruce Streets
Philadelphia, Penna. 19104

Dear Miss Ralph,

Thank you so much for your letter of Dec. 6, 1967,
in answer to my letter regarding locating unmarked
cemetery graves.

At the annual parish meeting of Trinity Church,
Red Bank, N. J., held on January 8th, a new cemetery
committee was appointed. I have given your letter
to the current chairman, Mr. Stephen W. Guzey,
and you should be hearing from him shortly, if
you have not already.

Thank you again for your kind offer of
cooperation.

Sincerely yours,
William A. Barrett



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"

January 23, 1968

Dr. Robert McC. Adams, Director
The Oriental Institute
1155 East 58th St.
Chicago, Illinois 60637

Dear Dr. Adams:

Thank you for your letter of January 17th. Fro Rainey and I are always pleased to hear of interest in the possible applications of magnetometers and other techniques, and it gives us hope that our experimentation with them will eventually be of general usefulness.

With the more sensitive magnetometers, such as cesium ones, there is some chance of locating former river channels and canals. The detection seems to depend less upon particle size than upon the fact that the fine silts and clays are generally slightly more magnetic than gravels and sands or, occasionally vice versa. Any success in detection and the limit in depth would, of course, depend upon this slight contrast in magnetism.

On the plain of Sybaris, we have detected former stream (or small river) beds at depths of about 4 meters. There, the difference in magnetic susceptibility between clay and sand is about 0.3×10^{-4} emu/cc. In comparison, a fired brick would differ 30 times as much. If there are archaeological deposits in the area of search, or still worse--modern debris on the surface--it would probably be difficult to detect the river channels with certainty. In other words, the region would have to be "magnetically quiet" in order to interpret these small anomalies.

The presence of saline or any other ground water should not affect possible magnetic anomalies.

We think that our Varian cesium magnetometer, Model 4920, is the best instrument for this purpose and certainly it is the most sensitive truly portable one which has been designed. It has also a built-in differential feature which is probably essential for this type of detection. So far, Varian has assembled only two of these, one which is ours and one, theirs. They could probably be persuaded to build some more and the cost per unit would be about \$13,000. Their services can also be rented, that is, magnetometer plus a geophysicist, for \$1,200 per week plus travel costs. If you are interested in this, the person to contact is Dr. Sheldon Breiner (Quantum Electronics Division, Varian Associates, 611 Hansen Way, Palo Alto, California 94303).

Varian has just recently developed a simplified type of cesium magnetometer called a Portable Search Magnetometer Model V-4971. This costs only \$5,750. With it, ground can be covered more rapidly, but its maximum sensitivity is only 0.5 gammas as compared with 0.05 of our unit. Also, it does not have the differential feature which may be essential for your problem.

It is easy to learn how to use a magnetometer, but it takes some experience to interpret the results. Also, it is advisable to have some one on hand who knows how to make minor repairs. There is no reason why students in archaeology and anthropology can't learn to do these things, but as far as I know, no extensive survey has ever been completed successfully without a geophysicist, physicist, or electronics engineer participating actively in the instrument survey.

If you have someone in mind whom you would like to have gain some experience in their use, perhaps, he could come to one of the sites where we plan to work this year. I am planning to be in Greece in May and early June, Ireland in late June, and Michigan possibly in July. Michigan would be the most practical except that we may not find interpretable magnetic anomalies and do not expect to be doing the large scale grids that we shall be doing abroad.

Enough about magnetometers. New aerial techniques--namely, infrared photography and infrared scanning are probably more appropriate for the location of ancient water courses. In collaboration with the Cambridge Research Laboratory of the U.S. Air Force, flights were made over the plain of Sybaris and surrounding hills in June, 1966. With the multi-band aerial camera produced by the Itek Corporation, the Air Force crew recorded simultaneously nine bands in the infrared spectrum, and they used also a new scanning device that recorded images that are just beyond the reach of photography. The interpretations of these have not yet been completed, but the indications are that the scanner detected ancient coastlines and large river courses with considerable clarity. In the infrared photographs, in which more detail was recorded, these large geological features were not detected, but the locations of a few smaller ancient stream beds were indicated in the pictures.

This fancy equipment is difficult or expensive to obtain and also the Air Force may not be welcome where you want to go. Infrared photography can be done successfully, however, with standard aerial cameras as described in the enclosed letter of Lt. Williams.

There are also several commercial companies who have the specialized equipment. One of these is HRB-Singer, Inc. and I have enclosed a copy of one of their recent articles.

I have enclosed also a preprint of an article that I wrote for a Guidebook that never materialized. The article and this letter are both too long, but I hope that you will continue to be interested in these techniques.

Sincerely yours,

Elizabeth K. Ralph

EKR/ek

Enclosures

Dr. Elizabeth Ralph
The Museum, Electronics Lab
University of Pennsylvania
Philadelphia, Pa.

Feb. 7, 1968

Dear Dr. Ralph -

Richard Ford at the University of Cincinnati has suggested that I write you about my problem.

I am attempting to make some arsenic checks on the remains of the body of Clovis Vanguin, the father of the painter Paul Vanguin. Clovis Vanguin is buried at the tip of the Straits of Magellan in the colony graveyard at Ft. Bulnes, the first settlement that the Chileans established in this desolate area after their struggle for independence. This was in 1843, and the location is at the tip of a rocky cape, the southernmost point on continental South America. The Fort was abandoned at the end of 1849. Fire swept the peninsula soon after, and the whole area remained desolate until 1940 when the Commandant of the fort at Punta Arenas persuaded the Chilean Government to restore the old Fort which, as the oldest settlement in Magellanes, deserved some touristic recognition. The old architect's drawings, by which the fort was reconstructed, had not indicated the location of ~~the~~ graveyard, so it has never been sought. Now that I have shown interest in locating the remains of Clovis Vanguin, the Chileans themselves are anxious to locate the graves in the old colony graveyard.

But - we are attempting to find a graveyard which has been buried beneath a scrub growth of heath-like ferns for over 100 years, a graveyard that was used for only six years. Now, I have read of various sonar-type devices that have performed miracles in locating buried materials. I have also read of trisbyrangers that make location of buried objects relatively easy. I need your advice as to the most likely tool to help us locate our objectives with the

greatest assurance and efficiency.

Let me give you as much relevant data as I can. The cape on which Ft. Bulnes is located is of granitic material. The soil is shallow and gravelly, probably not six feet deep any place on the cape. The bed rock comes to the surface frequently. The place was abandoned in 1849 because wells could not be dug nor could ~~they~~ the ground be filled adequately for gardens. In March 1967 I dug up a little graveyard across the bay from Ft. Bulnes where tradition had it that the colony graveyard had been located. All the burials were in wooden boxes joined by iron nails (some copper) and some of the burials had metal buttons or buckles on their shoes. Ft. Bulnes was a penal colony staffed with military during its brief existence, and I suppose that there will be some metal in each grave. The ledge of rock beneath the soil, where the graves were placed at our dig last year, was at a depth of three to four feet, so the graves were extremely shallow. It is probable that the depth is much the same on the cape where Ft. Bulnes is.

Any advice you can give me as to type of instrument and source from which I can acquire it (rent it?) for two or three weeks in March this year will be most useful.

Sincerely yours,

William Darr

Chairman of the Art Department

Earlham College

Richmond, Indiana 47374

February 14, 1968

Dr. William Darr, Chairman
Department of Art
Earlham College
Richmond, Indiana 47374

Dear Dr. Darr:

Your problem of locating a graveyard at the tip of the Straits of Magellan is an interesting one. I think that there would be some chance of locating graves at the site with a sensitive magnetometer such as the Varian Cesium Magnetometer Model 4920 or the newer (and cheaper) Model V-4971. I have enclosed a draft of a chapter in which various instruments and their use are described.

The applicability of magnetometers in the area would depend upon whether or not the granitic material is magnetic. Granite is sometimes so magnetic that it masks the deposits sought. If not magnetic, however, the bed rock, boulders, and gravel should not interfere. The graves would then be detected as regions of soil disturbance. Perhaps, you know a geologist who could answer this question. If not, I suggest that you write to Dr. Sheldon Breiner, Geophysicist, Quantum Electronics Division, Varian Associates, 611 Hansen Way, Palo Alto, California 94303.

Another possibility of finding these graves is with metal detectors, especially, if they are not buried deeply and if there is a good likelihood of their containing a reasonable amount of metal. An inexpensive instrument made in the U.S.A. is the Fisher T-20 (or T-10) metal detector. A newer one, and possibly better, is the SCM 2 Detector (literature for both enclosed). Personally, I've never had any luck with metal detectors except to find large pieces of iron, but others seem to have more confidence in them.

A useful solid probe is mentioned on p. 25 of the enclosed draft article. Another handy gadget is a hand augur such as the Soiltest A-4 (literature enclosed).

With best wishes for success.

Sincerely yours,

Elizabeth K. Ralph

EKR/abn

March 7, 1968

Mr. David O'Connor
% Antiquities Service
Arabeh el Madfuneh
Balliana, Egypt

Dear David,

Now that you have left, I have discovered that Lerici gave us a bum steer. According to Hesse (article enclosed), mud bricks made from Nile sediments are quite magnetic due to some iron compounds in Nile waters. Therefore, it looks likely that your mud brick structures could be detected with a magnetometer.

I don't know just what to do about this at the moment and from this distance, but if you could bring home a mud brick, approximately 3x3x3 inches, we could make sure of your particular mud. Even better, if it is possible to send it to me at either of the following addresses, I could check it in a region of known magnetic quietness:

- | | |
|---------------------------------------|---|
| 1) late April and before mid-June: | % Ing. Enrico Mueller Cassano Ionio 87011 (Cosenza) Italy |
| 2) May: | % Dr. George Papathanasopoulos Director Olympia Museum Olympia, Greece |

If you will be passing through Rome or Athens or some other ^{con-}venient place before I do, I could pick up the sample there. Places where I am likely to go are the Hotel Boston, Rome and the Hotel Alexiou, Athens.

In finding out your address, I just learned about Dr. Simpson's broken leg. I hope that this will not upset your plans completely.

With best regards,

Elizabeth K. Ralph

ATENEO DE MANILA

P. O. Box 154, Manila

FACULTY HOUSE

January 9, 1969


Dr. Froelich Rainey
Director
University of Pennsylvania Museum
Philadelphia
Pa USA

Dear Dr. Rainey,

In the December 20th issue of Time Magazine, an article mentioned your archaeological work in Italy. It was a very interesting article but ^{what} caught much of my interest was the use of Cesium Magnetometer in locating the buried relics of the past. At present I am engaged in locating possible sites of pre-Spanish burial grounds. Although mine detector could be used in locating some burial with metals, many of the ancient graves contained no metal at all. Yet, more often than not, individual graves had buried objects with them as burial furnishings, according to ancient custom, like native pots and jars, and Chinese or Annamese porcelanes.

I will appreciate it very much if you can give me information if Cesium magnetometer can be used in locating non-metallic grave furnishings, and where we can obtain such magnetometer.

Gratefully yours,


Rev. Jaime S Neri SJ

ATENEO DE MANILA
P. O. Box 184, Manila

Beth Raab
please reply

FACULTY HOUSE

January 9, 1969

Dr. Froelich Rainey
Director
University of Pennsylvania Museum
Philadelphia
Pa USA

Dear Dr. Rainey,

In the December 20th issue of Time Magazine, an article mentioned your archaeological work in Italy. It was a very interesting article but I caught much of my interest was the use of Geotomometer in locating the buried relics of the past. At present I am engaged in locating possible sites of pre-Spanish burial grounds. Although mine detector could be used in locating some burial with metal, many of the ancient graves contained no metal at all. Yet, more often than not, individual graves had buried objects with them as burial furniture, according to ancient custom, like native pots and jars, and Chinese or Annamese porcelains.

I will appreciate it very much if you can give me information if Geotomometer can be used in locating non-metallic grave furniture, and where we can obtain such magnetometer.

Gratefully yours,

James S. Merritt
Rev. James S. Merritt

January 16, 1969

Rev. Jaime S. Neri SJ
Faculty House
Ateneo de Manila
P. O. Box 154 Manila
Philippines

Dear Rev. Neri:

Dr. Rainey is in Libya this month, so I am replying to your letter of January 9th.

It may be possible to locate the pre-Spanish burial grounds with cesium magnetometers because graves cause soil disturbances which are usually more magnetic than undisturbed earth. Also, the pots and jars, if made of fired clay, are even more magnetic, and could be detected if the deposits are sufficiently massive.

These magnetometers are made by Varian Associates (Analytical Instruments Division, 611 Hansen Way, Palo Alto, California 94303). They now have a unit available (Model V-4971) which is even more portable than the ones which we used in the search for Sybaris. Its cost is \$5750.00. The best one to contact at Varian is Dr. Sheldon Breiner.

If you do not wish to purchase one, it is possible that we could send some one to your site with a magnetometer if you could help in defraying the travel and living expenses.

If the latter comes about, we should like to have more information about the geological conditions of the area of search and photographs of the terrain.

Sincerely yours,

Elizabeth K. Ralph

THE UNIVERSITY MUSEUM

THIRTY-THIRD AND SPRUCE STREETS
PHILADELPHIA 19104

Dr. Edward S. Rutsch
Dept. of Anthropology
Fairleigh Dickinson University
285 Madison Avenue
Madison, New Jersey

Date **October 15, 1970**

Invoice No. **EKR-ASCA**

Cust. Order No. **agreement
corresp 9-15-70**

Magnetometer survey at Beverick Manor, New Jersey
October 10th and 11th, 1970 \$250.00

Please make check payable to University Museum.

Asca
General
Depos.
146
4/15/71

| REFERENCE NUMBER | DATE OF INVOICE | INVOICE NUMBER | IN PAYMENT OF | GROSS AMOUNT | DISCOUNT | AMOUNT TO BE PAID |
|---|-----------------|----------------|----------------|--------------|----------|-------------------|
| 64368 | 10/15/70 | | YOUR INVOICE | 250.00 | | 250.00 X |
| FAIRLEIGH DICKINSON UNIVERSITY STUB - DO NOT PAY | | | 117299 TOTAL → | 250.00 | | 250.00 |

MAIL
TO:

Fairleigh Dickinson University
Rutherford, N.J.

SUBJECT

Check No. 117299
Amount \$250.00
Dated 1/11/71
Ref. No. 64368

FROM

THE UNIVERSITY MUSEUM
33RD and SPRUCE STREETS
PHILADELPHIA, PA. 19104

DATE

MESSAGE

We have received the above check but cannot find an invoice number in our records for this amount.

Please advise what the money is in payment of. Thank you.

Mrs. Ethel Hansen, Sales Manager

SIGNED

REPLY

DATE

Your inv. # EKR-ASCA
10/15/70
magnetometric survey at
Beverick Manor N.J. 10/10 & 10/11

SIGNED

75

THIS COPY FOR PERSON ADDRESSED

DEPARTMENT OF PREHISTORIC AND
ROMANO-BRITISH ANTIQUITIES.

THE BRITISH MUSEUM,
LONDON, W.C.I.

P&RB/GS

29 June 1971

Dr. E. K. Ralph,
Applied Science Centre for Archaeology,
University Museum,
University of Pennsylvania,
Philadelphia,
PENNSYLVANIA 19104
U. S. A.

Dear Dr. Ralph,

Thank you very much for responding so generously to our request for back numbers, and for putting us on the present circulation of the Masca Newsletter. We have now received the back numbers and are looking forward to receiving 1971, when this is available.

I must also thank you for the information you kindly forwarded to me in March about the Caesium Manometer. If you should be in England next year, when we are thinking of starting work, we should be most grateful if you would care to undertake a short field trial at our site. At any rate it would be most pleasant if you had time to meet us and give us the benefit of your advice.

Harold Barker sends his kind regards.

Yours sincerely,

G de G Sieveking

G de G Sieveking,
Assistant Keeper.

*Did not
reply -
better to
John
Thought
to consult
Hampton 1ST*

RECEIVED
MUSEUM
UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA
JUN 30 1971
GREAT BRITAIN
POSTAGE PAID
M3-241
HER BRITISH MUSEUM
POSTAL SERVICE
BY ORDINARY MAIL
IT DOES NOT CONTAIN ANY
SHOULD NOT CONTAIN ANY

U. S. A.
PENNSYLVANIA 19104
Philadelphia
University Museum of Pennsylvania
Applied Science Centre for Archaeology
Dr. E. K. Ralph

To open cut here

Sender's name and address : P.R.B./GS

The British Museum,

London, W.C.1

ENGLAND

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

Second fold here

ON HER BRITANNIC MAJESTY'S SERVICE

BY AIR MAIL
PAR AVION
AIR LETTER
AEROGRAMME



First fold here

Dear Dr. Ralph,

U. S. A.

PENNSYLVANIA 19104

Philadelphia,

University of Pennsylvania,

University Museum,

Applied Science Centre for Archaeology,

when this is available. the pack numbers and are looking forward to receiving 1971, circulation of the Mason Newsletter. We have now received request for pack numbers, and for printing us on the present Thank you very much for responding so generously to our I must also thank you for the information you kindly forwarded to me in March about the Green Meteorite. If you should be in England next year, please let me know. I would be most pleased to meet you and if you care to undertake a short field trip, I would be most pleased to accompany you. At the time of starting work, we spent a few days in the field and you would have seen the meteorite. I am sure you would have enjoyed it very much. I am sure you would have enjoyed it very much. I am sure you would have enjoyed it very much.

Dr. E. K. Ralph,
Applied Science Centre for Archaeology,
University Museum of Pennsylvania,
Philadelphia,
PENNSYLVANIA 19104,
U. S. A.

March 30, 1971

Dr. G. de G. Sieveking, Assistant Keeper
Department of Prehistoric and Romano-British Antiquity
The British Museum
London, W.C. 1, England

Dear Dr. Sieveking:

Our cesium magnetometers have been developed by Varian Associates (611 Hansen Way, Palo Alto, California 94303). Unfortunately, the company has not continued to manufacture the precision readout which we have found to be so useful. However, they may still have some V-4971 portable audio units. I have forwarded a copy of your letter to Mr. Arthur P. Kromer, Manager, Geophysics Product Line with the hope that he will send you some literature about their present magnetometers.

I have enclosed a few reprints in which some of our work is described. If you are thinking about assembling a cesium magnetometer yourself, I suggest that you write for a copy of a report by F. Morrison, C. W. Clewlow, Jr., and R. F. Heizer entitled "Magnetometer Survey of the La Venta Pyramid and Other Papers on Mexican Archaeology" (No. 8, June, 1970). It can be ordered from the Archaeological Research Facility, Department of Anthropology, University of California, Berkeley, California 94720. (It costs \$2.00).

In connection with an aerial photographic project, it is possible that we might come to England this summer or next year with our magnetometers. If this happens, we should be glad to try a few test lines or grids at your site.

Please give my regards to Harold Barker if you happen to see him.

Sincerely yours,

Elizabeth K. Ralph

EKR/jc

Enc.

DEPARTMENT OF PREHISTORIC AND
ROMANO-BRITISH ANTIQUITIES.

THE BRITISH MUSEUM,
LONDON, W.C.1.

P&RB/GS

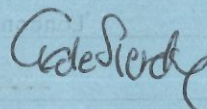
24 March 1971

Dr. E. K. Ralph,
Applied Science Centre for Archaeology,
University Museum,
University of Pennsylvania,
Philadelphia,
PENNSYLVANIA 19104,
U. S. A.

Dear Dr. Ralph,

In his report on the activities of the Applied Science Centre at the Philadelphia Symposium, Dr. Rainey referred to the Caesium proton-magnetometer developed for work at Sybaris. I should be most grateful to be put in touch with the individual responsible for this development. The British Museum is planning an excavation lasting some seasons, commencing in 1972-3, and I want to find out if it is possible to test a variation of the Caesium magnetometer in the field, or possible to acquire an instrument for our own use.

Yours sincerely,



G. de G. Sieveking,
Assistant Keeper.

TO OPEN SLIT HERE

SENDER'S NAME AND ADDRESS

P&RB/GS

The British Museum,

London, W.C.1.

ENGLAND

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NOT CONTAIN ANY ENCLOSURE;
POSTAGE WILL BE CHARGED

DEPARTMENT OF PREHISTORIC AND
ROMANO-BRITISH ANTIQUITIES

THE BRITISH MUSEUM,
LONDON, W.C.1.

P&RB/GS

8 November 1971

Dr. Elizabeth K. Ralph,
Associate Director,
The University Museum,
University of Pennsylvania,
33rd and Spruce Streets,
Philadelphia, Pennsylvania 19104,
U. S. A.

*Not
answered.
Ask S. Hampton
about him.*

Dear Dr. Ralph,

I am writing after a long interval to thank you for your letter of March 30th and for the information about cesium magnetometers.

As a result of the arrangements which you were kind enough to make on our behalf, I have had a certain amount of contact with the European representatives of various associations, but as yet we have not taken any active steps to purchase a magnetometer ourselves as we have not been able to arrange for any tests.

If you do happen to be in England next year in connection with your aerial photographic project, we should of course be most grateful for your advice in the field on suitable instrumentation, and it would be most pleasant if you could spare the time to try a few test lines on our behalf, *as you so kindly offered to do.*

Yours sincerely,

Gale Sieveking

G. de G. Sieveking,
Assistant Keeper.

FIRST FOLD HERE

SENDER'S NAME AND ADDRESS

P&RB/GS

The British Museum,

London, W.C.1. B 3DG

ENGLAND

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

SECOND FOLD HERE

BY AIR MAIL
AIR LETTER
PAR AVION AEROGamme

ON HER BRITANNIC MAJESTY'S SERVICE



Dr. Elizabeth K Ralph,

Associate Director,

The University Museum,

University of Pennsylvania,

33rd and Spruce Streets,

Philadelphia PENNSYLVANIA 19104

U. S. A.



CENTRO CAMUNO DI STUDI PREISTORICI

(25044) CAPO DI PONTE, (VALCAMONICA)
(BRESCIA) ITALIA
TELEFONO (Teleselezione 0364) 42091
C. C. P. N. 17/11254

26.10.1971

Miss. Elizabeth RALPH
University Museum
33 rd. & Spruce Sts.
PHILADELPHIA, Pa. 19104
U.S.A.

Prot. n. 71/3202

Dear Miss Ralph,

We have learned about your Magnetic
prospections at the Belgrade congress. In the Camonica
Valley we have a very serious problem of locating
habitation sites and cemeteries and would be glad to
have your advise on this matter.

Will you be coming to Italy in the
near future? Would you be able to visit us in the Camonica
Valley?

We look forward to hearing from you,

Cordially

Emmanuel Anati.

Iran - Dyson

Geraldton Historical Society

(INCORPORATED)

Member of the National Trust of Australia (W.A.)
Associate Member of Royal W.A. Historical Society Inc.

President S.G. Gratte.

292 Communications to be addressed to
Seventh St., Wonthella.,
West Australia. 6530
Phone.....

GERALDTON 11.2.71.
W.A. 6530

*Beets
Ralph
want to do
this +
way
four from
to c-14
meets
Fr*

The Director.,
University Museum.,
University of Pennsylvania.,

Dear Sir.,

I have been directed to you by the Director of the Academy Of Natural Sciences, Professor H.Radcliffe Roberts, and I am hoping that you may be able to help me.

Some members of our Society, with myself as leader, have taken part in two expeditions to the Gibson Desert of central Australia, in search of relics left buried out there by an explorer Sir John Forrest in 1874.

We have been successful in locating the place where the objects were buried and done a lot of digging without success. We will go out again if we can get a magnetometer or similar machine which will do the job. We would like to have your advise on this machine.

The objects are mainly of metal, being a shoing hammer(horse), an axe, shovel, pack saddle frame and a telescope which would contain a small quantity of brass. There is also a bottle containing a diary. The lot is buried probably between two to four feet deep in sand.

Our expeditions are financed by the members participating and any objects found will be presented to the local museum. Therefore the expedition is purely honorary and non profit. I am mentioning this so that you will realise that our funds are limited and therefore the cost of the magnetometer would have to be moderate. We have a radio technician who could build the machine. I do not think a suitable machine would be available here, although there are some used for mineral exploration but from enquiries, do not seem suitable. However we would appreciate your advise on this.

Thanking you for your trouble.

I remain.,
Yours faithfully.,


S.G. Gratte.

February 23, 1972

Dr. S. G. Gratte, President
Geraldton Historical Soc., Inc.
292 Seventh St.
Wonthella
West Australia 6530

Dear Dr. Gratte:

Dr. Rainey has asked me to reply to your letter of 2nd November, 1971. Please excuse the delay - yours must have been lost in our Christmas mails.

We have two cesium magnetometers which would be appropriate for searching for iron objects buried in sand, but not for other metals and non-metals unless the objects happen to cause a soil disturbance. Since these instruments are somewhat complicated to use, we do not rent nor loan them, but instead we send one of our trained people with them. This would require your paying his travel and living expenses plus air freight costs of 100 kg. of equipment. (I assume that there would be no problem with customs if they were sent air freight).

M. J. Aitken at the Research Laboratory for Archaeology, 6 Keble Road, Oxford, England, has several proton magnetometers which would also be suitable for the detection of iron objects. Perhaps, you could persuade some one from his group to come at less expense, or he might know of a magnetometer in Australia. Without a lot of experience in magnetometer circuitry, I wouldn't recommend building one yourselves. The Oxford proton magnetometers cost about \$3,000 and our cesium ones (with greater sensitivity), very much more.

If your objects are not buried more than two feet and are sufficiently massive, such as the axe and the shovel, you might be able to detect them with a simple metal detector. These are sometimes called "Treasure Probes" and some inexpensive ones are sold here in gift shops. If you do not find one, a manufacturer of a slightly more expensive type is Edmund Scientific, Co., 801 Edscorp Bldg., Barrington, New Jersey 08007, U.S.A. They have metal

-2-

detectors priced from \$29.95 (No. 71,447) to \$134.50 (No. 80,152).
These are very easy to operate.

Sincerely yours,

Elizabeth K. Ralph

EKR/ek

November 5, 1971

Dr. Emmanuel Anati
Centro Camuno di Studi Preistorici
Capo di Ponte (Valcamonica)
(Brescia), Italy

Dear Dr. Anati:

It is always a pleasure for me to come to Italy and to do a magnetometer survey. However, I have no specific plan of coming at the moment. We have tentative requests for southern Italy (with Dr. Adamasteanu) and for Egypt, but I shall not know about these for several months.

Could you let me know at what time of the year you plan to excavate and what months would be suitable for the magnetometer survey, that is, when there are not crops and when it is not too cold. Our cesium magnetometers do not work so well when it is very cold.

It would be helpful to know too if the site is appropriate for a magnetometer survey. The earth itself must not be too magnetic, and there must be some contrast in magnetism between the earth and the structures sought. Would it be possible for you to send me samples (about 100 grams each) of the soil, of several natural rocks, and of the materials of the habitation sites?

May I trouble you also for references to publications or more information about the site and cemeteries?

Sincerely yours,

Elizabeth K. Ralph

EKR/ek



Museum Applied Science Center for Archaeology

Froelich Rainey, Director

Elizabeth K. Ralph, Associate Director

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

November 23, 1971

Professor Dino Adamasteanu
Soprintendenza alla Antichita
della Basilcatta
Via Vescovado
Potenza (Pz)
Italy

Dear Professor Adamasteanu:

In regard to a possible magnetometer survey at Sirii or other nearby sites, I have prepared the enclosed budget.

I was sorry not to see you again before I left Italy this year, but I hope that we shall meet again in 1972.

If you would like us to do this magnetometer survey, please let me know as soon as possible so that we may put it on our schedule for 1972.

Sincerely yours,

Elizabeth K. Ralph

EKR/ek

Budget for Cesium Magnetometer

Survey at Sirii, S. Italy by Museum Applied Science Center for Archaeology

Time: 1 month, September, 1972

Associate Director: Elizabeth K. Ralph

| | |
|---|------------------|
| Air-fare: Philadelphia to Rome and return | \$ 700.00 |
| Overweight for instruments Philadelphia to Rome and return | 1,000.00 |
| Local travel in Italy: 2000 miles at 10¢/m. Extra allowance for high cost of "benzina" in Italy | 200.00 100.00 |
| Living expenses for 30 days at \$15.00/day | 450.00 |
| Miscellaneous supplies and expenses | <u>300.00</u> |
| Total for Director of Magnetometer Group | \$ 2,750.00 |

Assistants

Three assistants, two of whom may be untrained workmen, are to be provided for and paid by D. Adamasteanu. One of the assistants must have the educational background and physical ability and stamina equivalent to that of Nunzio Lione. Nunzio is an experienced "geometra", but probably will not be available in September, 1972.

Maps of the Site and Aerial Photographs Scale - 1:10,000 or better to be provided by D. Adamasteanu.

Surveyor

To be provided by D. Adamasteanu to locate magnetometer grids and anomalies on the maps and on the ground. Full-time surveyor is probably not required.

Drilling

If drilling is required to test and confirm anomalies this is to be arranged and paid by D. Adamasteanu.

Appointments

All appointments for consultation and direction and for the provision of workmen are to be kept. If not, the magnetometer survey will be terminated immediately even though some or most of the funds have been spent.



CENTRO CAMUNO DI STUDI PREISTORICI

(25044) CAPO DI PONTE, (VALCAMONICA)
(BRESCIA) ITALIA
TELEFONO (Teleselezione 0364) 42091
C. C. P. N. 17/11254

27 NOV. 1971

Dr. Elizabeth K. RALPH
Museum Applied Science Center for Archaeology
The University Museum
University of Pennsylvania
33rd & Spruce Streets
PHILADELPHIA, PENNSYLVANIA 19104

U.S.A.

Prot. n. 71/ 3193

Dear Dr. Ralph,

Thank you for your kind letter: the best time of the year, for excavating, is June-July but then the vegetation is at its best. In January-February, there is no vegetation, but it might be quite cold.

We have so many areas to survey that I can hardly decide from where should I take the earth samples to send you. But I shall send you some in the near future.

As you may know, the Camonica Valley is some 45 miles long and a few hundred meters wide. In it, over 100.000 prehistoric figures have been found, dating back from the Neolithic, the Bronze and Iron Ages. So far, very little remains of settlements and cemeteries have come to light but they must exist and a thorough survey may help discover them. There are some ten sites which I would like to check and I hope that you will be able to reach us, some time, with your tools.

Sincerely yours

Prof. Emmanuel Anati
(Director)

WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI 63130

✓ Beth
Ralph

DEPARTMENT OF ANTHROPOLOGY

December 2, 1971

Froelich Rainey
Department of Anthropology
University Museum
33rd and Spruce Streets
Philadelphia, Pennsylvania 19104

Re: Portable Magnetometers (Archaeological Applications)

Gentlemen:

I need some advice on the requirements and limitations in the use of a portable magnetometer for the following specific project, as well as information regarding possibilities of borrowing, leasing or otherwise gaining access to a magnetometer for a very short period.

The project proposed involves the definition of buried structures in the pyramid of Akapana at Tiahuanaco, a site 13,000 feet above sea level in the Bolivian Altiplano. The pyramid is presumed to be mainly an earthen construction, but we do know that it contains some structural stone architecture of andesite.

Tiahuanaco was the mother site and mecca for the Middle Horizon empire in Peru dating to A.D. 500-1000, yet we know woefully little about the assumed capital, Tiahuanaco, except by backward extension from its manifestations in Peru. There are likely still large buried stone sculpture like those personnel of Varian Associates, geoMetrics, and the University Museum, Philadelphia, uncovered at La Venta and San Lorenzo; it would be extremely important to uncover these; but even more important to define the exact nature of the pyramid at the site, presumably the single most important structure at the site.

The structural stone at Tiahuanaco is andesite which contains significant quantities of iron-rich biotite. It is probably imported from a distance of 50 km. or more--it is clearly not a local stone, but its exact source is not yet defined. I know nothing of the trace element composition of the soil at the site unfortunately, or its magnetic properties. During the wet season (November to April), there is a relatively high water table on the plain where Tiahuanaco is situated--at times this water comes within two or three feet of the surface, so that excavation is stopped at this level. I would assume that this might cause difficulties, but am hoping that on the pyramid itself that the ground water situation will be different, and that also during the dry season the water table will be significantly lower.

Sincerely,

David Browman

David Browman *da*
Assistant Professor

December 10, 1971

Prof. David Browman
Dept. of Anthropology
Washington University
St. Louis, Missouri 63130

Dear Prof. Browman:

Professor Rainey has referred your letter of December 2nd to me. The search for structures, even if magnetic, beneath pyramids and mounds is extremely difficult because of side effects from the pyramid itself. Perhaps, you have read Frank Morrison's account of his survey at La Venta and the difficulty he had in interpreting the magnetometer plots.

However, before we say it cannot be done, could you send me a sketch of the pyramid with approximate dimensions and especially information about the depth of the possible structures? Also, do you ^{or} have a sample of the overlying soil (about 100 grams) so that we can test it for magnetic susceptibility? If the soil itself should happen to be magnetic, this would make the survey even more difficult.

About our magnetometers, we do have an Elsec proton magnetometer that can be loaned. However, our more sensitive cesium magnetometers (made by Varian Associates) are more complicated to us and we always send one of our trained people with them. This means that your survey would have to be filled into our schedule and that we should need money for expenses (travel with 150 kg of overweight and food and housing). One minor but important item is that we need electricity near where we live to change the batteries all night.

Sincerely yours,

Elizabeth K. Ralph

EKR/ek

12/9/71

MASCA TENTATIVE "RESEARCH" PLANS -
NAMELY, PROSPECTING AT
ARCHAEOLOGICAL SITES WITH
GEOPHYSICAL INSTRUMENTS

| SITE | DATE | FUNDS NEEDED |
|--|--|--------------------------------------|
| Magdalena Lake Basin Mexico | March, 1972 | ? |
| <i>Corsica</i> Egypt - O'Connor | Jan? 1973 | ? |
| Idalion, Cyprus Univ. of Conn. and Harvard | June-July | (\$3000 from Univ. of Conn.) |
| Camonica Valley, N. Italy | late July? | ? |
| <i>Yugoslavia? dinars, no dollars</i> Sirii, Italy | Aug.-Sept.? Sept.? | (\$2800 from Adamasteanu) |
| <i>FIAT?</i> Iran, R. Dyson + N.Z. C ¹⁴ | Oct.-Nov. | ? |
| England (with Sieveking, British Museum) | Aug. or fall? | ? |
| S. Argolid, Greece (regional survey with aerial photography M. Jameson interpretation) | mid-May-June any time May - Aug, | Ford Foundation |
| Greece (balloon harbor survey w. J. Whittlesey along shores Peloponnesia) | ? | ? |
| Lebanon (site photography from balloon, J. B. Pritchard) | ? | Ford Found. + balloon expenses |
| Iran | spring-summer | |

Doug Hancock

Corsica

Yugoslavia? dinars, no dollars

FIAT?

+ N.Z. C¹⁴

Ford Foundation

Ford Found.
+
balloon expenses



Enero 9 de 1972.

Francisco Beverido P.
Apartado # 386.
Jalapa, Ver.
MEXICO.

Mr. W. Sam Carpenter 3rd.
1060 Dupont Building.
Wilmington, Delaware.
U. S. A.

Muy estimado amigo Sam:

Seguramente te sorprenderá recibir noticias mías, pero antes de otra cosa que ésta lleve para ti mis mejores deseos por que el año que se inicia tenga todo género de dichas y parabienes para tí.

Pasando a otra cosa, hace muchos meses que he tenido la intención de escribirte porque pienso que podrías ayudarme a conseguir mis propósitos, pero voy al grano:

El año pasado por el mes de julio tuve la oportunidad de hacer un largo recorrido por el sur de Veracruz a bordo de uno de los helicópteros de Petroleos Mexicanos y durante él tuvimos la fortuna de localizar tres sitios arqueológicos de la importancia (o quizá mayor) de San Lorenzo, La Venta o Laguna de los Cerros, desconocidos hasta entonces y por supuesto inexplorados; dentro de mis planes de trabajo a largo plazo está incluir su exploración y estudio, de uno de ellos ya hicimos un recorrido y un muestreo de superficie, pero mi mayor interés es hacer una investigación magnetométrica, todos ellos están en la zona en donde el empleo de estos aparatos da resultados óptimos y ahí es donde yo necesito tu intervención.

Ya me estoy dirigiendo a la Dra. Elizabeth K. Ralph y al Dr. Michael D. Coe en el mismo sentido, nuestra Universidad no tendría los recursos suficientes para financiar tales investigaciones, pero creo que la intervención de ustedes nos ayudaría a conseguirlo.

Acompaño a ésta unas fotos tomadas desde el aire de los sitios que he mencionado.

Si puedes hacer algo por mí te agradeceré me escribas unas líneas haciéndome saber e indicándome que debo hacer para llevar adelante ese asunto.

Gracias anticipadas y con la admiración de siempre me despido

Para Beverido

Enero 9 de 1972.

Apartado # 386.
Jalapa, Ver.
MEXICO.

Miss Elizabeth K. Ralph.
University Museum.
33rd. and Spruce St.
Philadelphia, Penn.

Muy estimada Dra. Ralph:

Periódicamente tengo noticias de sus trabajos a través del MASCA Newsletter. Hace pocos días recibí el número de diciembre de 1971 y por el conocí de sus investigaciones en Kingscote, Inglaterra.

Por el mismo boletín tuve conocimiento de la publicación: DATING TECHNIQUES FOR THE ARCHAEOLOGIST, del cual acabó de solicitar un ejemplar.

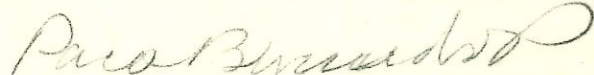
Pero es otra la razón que me ha decidido enviarle esta carta: En julio del año pasado, volando en helicóptero tuve oportunidad de descubrir en el sur del Estado, -- tres sitios arqueológicos de la importancia (o quizá mayor) de San Lorenzo o La Venta, en una zona que usted sabe que es ideal para la investigación magnetométrica.

Como nuestra Universidad no tendría los recursos necesarios para financiar este tipo de investigaciones, -- quiero pedirle que me ayude a conseguirlo por otros conductos. En el mismo sentido estoy dirigiendome a nuestros comunes amigos el Dr. Michael D. Coe y el Sr. W. Sam Carpenter. Le envío unas fotos para que usted pueda apreciar la magnitud de esos centros ceremoniales.

Voy a agradecerle anticipadamente me escriba algunas palabras sobre esto, qué piensa que podamos hacer o cual sería el camino a seguir.

Finalmente quiero expresarle mis mejores deseos para usted en el año que se está iniciando; también aprovecho la oportunidad de anunciarle que he sido nombrado Director de la Escuela de Antropología de nuestra Universidad Veracruzana.

Reciba cordiales saludos de su amigo y servidor



Paco Beverido P.

P.S. Le envío copia de esta carta a su domicilio particular.



Enero 9 de 1972.

Francisco Beverido Perreau
Apartado # 386.
Jalapa, Ver.
MEXICO.

Miss Elizabeth K. Ralph.
University Museum.
33rd. and Spruce St.
Philadelphia, Penn.

Muy estimada Dra. Ralph:

Periódicamente tengo noticias de sus trabajos a través del MASCA Newsletter. Hace pocos días recibí el número de diciembre de 1971 y por el conocí de sus investigaciones en Kingscote, Inglaterra.

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Reciba cordiales saludos de su amigo y servidor

Paco Beverido P.
Paco Beverido P.

P.S. Le envío copia de esta carta a su domicilio particular.

W. SAM CARPENTER, 3RD
1060 DU PONT BUILDING
WILMINGTON, DELAWARE 19801

*Beth
Ralph.*

February 2, 1972

*How about
this?
Fro*

Dr. Froelich Rainey
University Museum
33rd & Spruce Sts.
Philadelphia, Pa. 19104

Dear Fro,

Enclosed is a letter from Paco Beverido requesting help on a magnetometer investigation. I suppose by now Beth, Ralph and Mike Coe will also have heard from him. What should we do?

Sincerely,

Sam

February 4, 1972

Dear Mr. Carpenter:

Dr. Rainey is in the west on a Phi Beta Kappa lecture tour and will return to the office about the 16th of February. He will see your letter about the magnetometer survey as soon as he gets back and I am sure will be in touch with you.

Sincerely,

David Crownover
Executive Secretary

Mr. W. Sam Carpenter, III
1060 du Pont Building
Wilmington, Delaware 19801

February 23, 1972

Dr. Paco Beverido
Apartado #386
Jalapa, Veracruz
Mexico

Dear Paco:

Thank you for your letter of January 9th and for the photographs. Please excuse my delay in replying, but I was waiting for Dr. Rainey to return from Egypt and then from a lecture tour. Also, Mr. Carpenter has been away some of the time.

In regard to magnetometer surveys at San Lorenzo and La Venta, I think that we should be able to come there in the winter of 1973. We are scheduled to be in Egypt in January and possible in the beginning of February, but thereafter we should be free to come. Please let me know if February and March, 1973, would be convenient for you.

We read about your exciting ^{find re the} calendar, and send you our congratulations.

With best regards,

Elizabeth K. Ralph

EKR/ek
CC: Dr. Michael Coe
Dept. of Anthropology
Yale University
New Haven, Connecticut

February 23, 1972

Dr. Alan McPherron
Dept. of Anthropology
University of Pittsburgh
Pittsburgh, Pa. 15213

Dear Alan:

Froe Rainey has now returned and he thinks that one of us, probably I, will be able to come to Yugoslavia with the cesium magnetometers sometime this summer, possible late July and early August.

When your plans are definite, let me know, especially, about the timing in case I can make it when it is optimum for you.

With best regards,

Elizabeth K. Ralph

EKR/ek



FACULTY OF ARTS AND SCIENCES
UNIVERSITY OF PITTSBURGH
PITTSBURGH, PENNSYLVANIA 15213

DEPARTMENT OF ANTHROPOLOGY

3 Mar 72

Dear Beth,

My delight exceeds all bounds at your letter. At present, Ruth Tringham and I expect to start digging around the first of August, at two Koros (=Starcevo, or Early Neolithic) sites near Subotica. Both of them are believed to have fired house-floors. We'll see. I'd also like to survey Kusovac, where two pits put in in summer of 1970 yielded massive house floors, and where there seem to be no factors--human, political, or architectural--that would inhibit magnetometer survey. I am also negotiating with some one to borrow a coring device, which would enable us to take a core at every magnetometer measuring point, or else in the center of big anomalies, enabling pretty fair control of the stratification. Of course pH and phosphat tests could also be run on the core samples. The boring machine produces a solid core, apparently. I don't know if you people have had experience with such gadgets. I'd like your opinion when I get hold of the actual device.

I'll give you more precise details when we have the funding approved. The date, however, is fairly definite, so that Late July or early August would be optimum. Most of us will actually be over there from late June on however, so that your work could be scheduled earlier if that is best for your own plans. In fact it would be better if we could do our work before any actual digging takes place, not only from the point of view of not disturbing your measurements but also because all of us will be pretty occupied at the start of the digging operation, and if it could be done in peace and quiet it would be all the better for me.

Srejović, Mile, and the others still talk about you in hushed tones. In my opinion, mapping an entire site by magnetometers would be a truly great accomplishment, and I look forward to the work next summer with great joy and anticipation.

By the way, if you remember, I came to visit you at your farm on Sunday, March 15, 1970, at which time we tried out that little magnetometer. I was en route from Washington where I consulted with the Smithsonian, and I hastened off that same Sunday for Pittsburgh. Now I am trying to claim that trip as an unreimbursed expense to IRS, and I have no document from the Smithsonian stating that I was there on Friday, and they have no memory of my visit, so decline to give me a statement for IRS. If you can remember my visit to you, would you prepare a statement "to whom it may concern" that I consulted with you that Sunday (it doesn't have to specify that it wasn't right in the museum) about plans for scientific collaboration for the coming summer in Yugoslavia, or something ~~for~~ to that effect, and send it to me? I suppose if Fro would also sign it, it would be all the better. I am getting bugged by IRS for evidence as to the purpose of my trip.

With best regards,

Alan McPherron

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The
University
of
Connecticut

STORRS, CONNECTICUT 06268

THE COLLEGE OF
LIBERAL ARTS AND SCIENCES
Department of History

March 8, 1972

Slag ?
mud bricks ?
Fe ?
June 15 ff.

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

Dear Dr. Ralph:

I am writing (rather belatedly, for which I apologize profusely) to pursue a telephone conversation I had with you before Christmas about the possibility of your sending a one-or-two man team to do cesium magnetometry at our excavation at Idalion, Cyprus this summer. I enclose a copy of our proposal submitted to the National Endowment for the Humanities, which explains something about the excavation in general. This proposal has been approved by the N.E.H. but they advised us to apply only for a gifts-and-matching grant this year and so we are in the position of having to raise a matching sum. As I recall, when I spoke with you, we agreed that Idalion should pay for the travel and maintenance of your crew. Because of the nature of our grant from N.E.H. however we have to ask all members of the excavation to apply for their own travel funding to the American Council of Learned Societies, although Dr. Wright is of course trying very hard to raise all the matching monies himself. I don't know how this will affect your prospective participation: we would still pick up your crew's expenses at the dig.

As you suggested, I contacted our geologist before Christmas and asked him to send you some samples of rocks and soils from Idalion to test the feasibility of cesium magnetometry at our site. I don't know whether he has done so. If he hasn't, I will try to exert some pressure on him to do so.

Dr. Wright will also be writing to you shortly. We regret very much having to ask you to apply for travel monies yourselves, since you are most kind in agreeing to help us at all.

Yours sincerely,

Anita Furshpan
Anita Furshpan
Assistant Professor of History

AF/jp

Enclosure

March 16, 1972

Dr. Anita Furshpan
Dept. of History
The University of Connecticut
Storrs, Conn. 06268

Dear Dr. Furshpan:

Thank you for your letter of March 8th and for the copy of the proposal. As for our applying to the American Council of Learned Societies, we prefer not to do so because in our NSF grants present and pending (but not for work in Cyprus specifically), we have stated that we have not applied to other foundations.

Therefore, for one person to come plus equipment (150 kg) will depend upon our doing some other surveys in Europe this spring and summer for which travel money is available. This, we do not know at the present time. Even so, we might need funds for a round-trip boat trip from France or Italy to Cyprus. (One person plus a Fiat 850).

At any rate, it would be a good plan to test some samples of rocks and soils beforehand. These have not yet arrived. Is the slag that you mention in the proposal from iron or other metals? If it is iron, is it scattered widely over the site or is it in discrete areas?

If one of us, probably me, does come, I shall need the help of three workmen or students, or a combination of both.

Sincerely yours,

Elizabeth K. Ralph

EKR/ek

DUMBARTON OAKS
TRUSTEES FOR HARVARD UNIVERSITY
1703 THIRTY-SECOND STREET, WASHINGTON, D. C. 20007

CENTER FOR
BYZANTINE STUDIES

March 20, 1972

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

Dear Miss Ralph:

Many thanks for your informative letter of March 16 about the magnetometers. I am writing to Mr. Harper, our field director for the Syrian dig, about the fluxgate magnetometer. From the descriptions of the site that I have seen, it would appear that that one might be adequate. If, however, it develops that your operator and the cesium magnetometer get to Cyprus, I should be interested to know this.

Sincerely yours,



William C. Loerke
Director of Studies

DUMBARTON OAKS
TRUSTEES FOR HARVARD UNIVERSITY
1703 THIRTY-SECOND STREET, WASHINGTON, D. C. 20007

CENTER FOR
BYZANTINE STUDIES

March 9, 1972

Mr. Froelich Rainey
Director
Applied Science Center for Archaeology
The University Museum
University of Pennsylvania
33rd and Spruce Streets
Philadelphia, Pennsylvania 19104

Dear Mr. Rainey.

Professor George Forsyth has called to my attention the excellent Masca Newsletter published by your Center. Dumbarton Oaks in collaboration with the University of Michigan is embarking upon a new excavation on the Euphrates, upstream from the dam presently under construction, and therefore, with a rather tight schedule imposed. The site is at Dibsī Faraj, and we would hope to get under way in May-June of this year. It would seem to me that an instrument like your Portable Search Magnetometer Model V-4971 Audio Type would be most useful for this first season. I write to ask what the possibilities are of making use of such an instrument and whether extensive training is required for the operator of it.

with best regards,

Sincerely yours,

William Loerke

William C. Loerke
Director of Studies

*Back
Ralph
Henri Amanton
740*

March 16, 1972

Dr. William C. Loerke, Director
Center for Byzantine Studies
Dumbarton Oaks
1703 Thirty-Second Street
Washington, D.C. 20007

Dear Dr. Loerke:

Dr. Rainey has asked me to reply to your letter of March 9th. Our cesium magnetometers are a bit complicated to use and more difficult to fix when something goes wrong so that we prefer to send a trained operator with them. The problem this spring is that we have tentative commitments for work in Corsica and possibly Cyprus and Yugoslavia in May and June. If these do not come about, then we should need funds for one person plus 150 kg. of overweight to travel from the U.S.A. to Iraq and return.

However, we do have a simple fluxgate magnetometer that we should be glad to lend to you (without an operator). Its depth of penetration is not so great as the cesium magnetometers, but if you are looking for structures not deeper than two meters, it might be useful. This instrument, too, has a bad habit of breaking down, but we could put it in good working order and hope for the best.

Sincerely yours,

Elizabeth K. Ralph

EKR/mm



UNIVERSITY OF PITTSBURGH
PITTSBURGH, PENNSYLVANIA 15213

DEPARTMENT OF ANTHROPOLOGY

20 March 1972

Dear Beth:

It is with the utmost regret that I have to let you know that the project for this coming summer has been cancelled by the Yugoslav government. The proposed excavations were to have taken place about 6 km. south of the Hungarian border, and we knew all along that there might be problems, but our Yugoslav co-investigator was assuring us right until last week that everything had been cleared. We have no idea of exactly what happened. As things now stand, Ruth Tringham and I plan to be in Yugoslavia this summer in any case, when we will try to put together a similar project either with a different Yugoslav investigator or in another area of the country. We hope to commence field-work a year from this coming summer. Perhaps we can all work together at that time.

Sincerely yours ,

Alan McPherron
Associate Professor

Sorry to have to use this form--I have lots of people to notify. Thanks for the letter to the Tax people--it ought to do the trick. Do you think I might again borrow that little magnetometer if it is working now?

April 22, 1972

Dr. Alan McPherron
Dept. of Anthropology
University of Pittsburgh
Pittsburgh, Pa. 15213

Dear Alan:

Sorry that your plans were upset for this year. It is just as well for us because our Corsican trip has been postponed which eliminated funds to cross the Atlantic this spring.

William G. Loerke (Dumbarton Oaks) has already asked to borrow our fluxgate magnetometer, but I have not heard from him recently. It makes a noise now, but the meter does not work. We may be able to fix it, but I am not sure.

With best regards,

Elizabeth K. Ralph

EKR/ek

April 21, 1972

Dr. Anita Furshpan
Dept. of History
The University of Connecticut
Storrs, Conn. 06268

Dear Dr. Furshpan:

After writing to you on March 16th, our plans have changed considerably. Our work in Corsica (the site for which we have travel funds) has been cancelled due to French political problems in the region of Aleria. Also, work in Yugoslavia has been postponed for this year.

Therefore, I do not plan to go to Europe this spring or summer. Instead, I am planning a field trip to Arizona in June.

It is possible that I may go to Europe in September, but I imagine that your season will be over by then.

Sincerely yours,

Elisabeth K. Ralph

EKR/ek

JOINT EXPEDITION TO IDALION, CYPRUS

Memorandum

To: The Idalion Staff

11 May 1972

From: G. Ernest Wright

(1) Please xerox a copy of your travel ticket and send it to me so that it can be used for accounting purposes as matching money for our NEH grant.

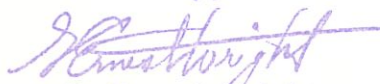
(2) Enclosed is a medical form and some medical advice. This was prepared by our Medical Director, Dr. Melvin K. Lyons, who wants everyone on the staff to be very strict about seeing that the form is filled out and the medical advice followed. This includes getting cholera shots since there are still pockets of cholera in the Near East. Consequently, he has requested that each of you have a medical check-up, and return the completed form to my office (Rm. 102, 6 Divinity Ave., Cambridge, 02138) just as quickly as possible. I will then forward it to Dr. Lyons for his inspection.

If, for some reason, you cannot or will not complete the medical questionnaire, then it is required that you write me a letter absolving the Idalion Expedition or the American Schools of Oriental Research from any responsibility with regard to any sicknesses you may incur during this summer.

(3) Finally, I will be sending to you shortly a few sheets of our new Idalion stationery - it's just off the press! The letterhead was designed for us by Nan Argyros of MIT, one of our new staff members. I ordered only a thousand sheets for our use this summer, with the hope that if we become richer in the future we can order more in a two-toned color effect, which Nan has already designed. By the way, the symbol on the letterhead is a sphinx drawn from the 5th century coins of the kings of Kition and Idalion. Obviously this paper cannot be used for routine correspondence; it is too expensive and not enough has been printed up. However, please feel free to use it when you are writing to someone or some institution that you would like to have know about the Idalion Expedition. It is primarily for publicity purposes that we have this stationery available.

In addition, each member of the staff will be receiving a small card with the same printing as on the letterhead, and signed by me as Expedition Director. There will be space on the card for your signature. We think this might serve a useful purpose in identifying yourself on Cyprus, and in securing admittance to museums, etc. I didn't particularly want my name included in the letterhead quite so vividly, but I was persuaded that it should be there for address purposes. No return address is printed on the envelope, so that each one can put his own return address on it.

Sincerely,


G. Ernest Wright

GEW...b

enc.

The
University
of
Connecticut

STORRS, CONNECTICUT 06268

THE COLLEGE OF
LIBERAL ARTS AND SCIENCES
Department of History

June 19, 1972

203-429-3311
ext 1296

Dr. Elizabeth Ralph
Museum Applied Science Centre for Archaeology
University Museum
University of Pennsylvania
33rd & Spruce Streets
Philadelphia, Pennsylvania 19104

Dear Dr. Ralph:

Thank you for your letter and once again I must apologize for not replying sooner.

We were very disappointed that you are unable to come to Cyprus this summer; however I understand your problems and hope you will have a good season in Arizona.

At the suggestion of Jean Perrot we have written to Albert Hesse in hopes that he may be able to come to Idalian to do some electrical resistivity work instead, which Jean says has been very successful at Susa.

I hope that perhaps you will consider coming to Idalian next year, and will write to you as soon as we know our plans for 1973 better.

Yours sincerely,

Anita Furshpan

Anita M. Furshpan
Assistant Professor
of History

AMF/jp



STANFORD RESEARCH INSTITUTE
MENLO PARK, CALIFORNIA 94025
(415) 326-6200

July 19, 1973

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

Dear Dr. Ralph,

Our trip to Egypt, with our underground electromagnetic sounder, has been delayed until autumn by the Egyptian government.

While waiting for the final approval of our project, we are investigating other possible archaeological sites which might be suitable for exploration by our technique. Can you suggest sites of interest to archaeologists, preferably in dry locations where electromagnetic sounding could possibly give valuable data in advance of excavation? Since we are largely ignorant of archaeology, perhaps you could put us in touch with individuals or journals where we could gain further information.

I know that funds for archaeological work are hard to find-- that part of the problem is a separate matter. For example, the strong interest in our capability at NSF may make other grants from them a possibility.

We would be most grateful for any suggestions you could offer.

Thank you for the very interesting article you sent on your magnetometer work in Egypt.

Sincerely,

Lambert Dolphin by HD

Lambert Dolphin
Senior Physicist
Radio Physics Laboratory

LD:hd

Barry Kemp

Donald Redford Dec. Jan.

Univ Toronto

Near Eastern Studies

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FACULTY OF ARTS AND SCIENCES
UNIVERSITY OF PITTSBURGH
PITTSBURGH, PENNSYLVANIA 15213 15260

DEPARTMENT OF ANTHROPOLOGY

25 March 1974

Dear Beth,

No wonder I looked vague when we talked about the MASCA C-14 correction curve. I never received it! Then I went through my file of MASCA Newsletters, which I treasure and maintain a special file for, and discovered to my horror that there is something going on, such that I am receiving about 1/2 of the total number. Thus, for example starting with Vol. 5, I find I hold the following:

| VOL | NO | DATE |
|-----|----|--------|
| 5 | 2 | Nov 69 |
| 6 | 2 | Nov 70 |
| 7 | 1 | Jun 71 |
| 7 | 2 | Dec 71 |
| 8 | 1 | Dec 72 |
| 9 | 2 | Dec 73 |

} my present holdings

I have no idea what is going on, but I also occasionally "miss" a journal when I am in the field and things pile up in the front office for me, so I suppose the same happens in your case. Perhaps it will please you to know that the Newsletter is so popular!

Do you suppose I might be sent the missing issues?

I just showed a slide of you with the Divostin magnetometer crew, operating the Cesium, to my class today. So I'm keeping you in mind and eye. I've also been in touch with Albert Ammerman at Stanford. It seems that Sheldon Breiner isn't even coming to Italy; he's going to train some physics-oriented grad students of Ammerman's right there in California, where they're going to try out the magnetometer on local sites (!). The students will do the actual work in the field, and he hopes to use Scollar's programs for making maps of the data. He also is thinking of trying to use Linington's programs in Rome, but is very much aware of the problems of working with Linington, so we agree that, unless one could sneak the programs away from Linington and use them on the computers at Parma, it would be best to stay completely away from him.

With regard to the gamma-ray spectrometer, Ammerman feels that the gadget looks promising for detecting the peculiar kinds of trash dumps found on Terramare sites, -very think dumps, apparently, suggesting collecting trash and garbage from many areas and putting the stuff together in pits.

Ammerman plans to do very little digging; infact, I would hardly characterize him as a field man. He seems very eager to have me there, just because I have been present when such survey work was done. The site is one of the typical hilltop settlements, and he says it measures only about 80 x 80 m., so won't present the sheer size problems of Grivac or even Divostin. Also, he claims he can control what the farmers put in, and is going to have the land turned to hay rather than grain crops, to make things easier. I wonder just what success he will have in all this, but it does look worthwhile being present for. Frankly, however, I wish to hell you were doing the magnetometer work. But he seems to have it all set up with ~~Brimingham~~ ~~Bein~~ Breiner--you were right, they are renting Breiner's equipment.

If I could talk the Smithsonian into allowing me to expend funds to complete the magnetometer survey at Grivac, would you be interested? I doubt I could get funds to bring you from the US, but if you're going to be in the Near East in September, could we work something out for, say, August? Naturally, I'd have to look into the necessary permits in advance--let Srejovic know, etc.

With all best wishes and thanks all over again for your hospitality--

Yours

Alan

McPherron

Ms Beth Ralph
The University Museum
University of Pennsylvania
33rd and Spruce Streets
Philadelphia, Penna. 19104

27 May 1974

Dear Ms. Ralph:

Mr. Joseph Garnier, of Varian Associates in Palo Alto told me that you had conducted much work using a cesium magnetometer for archaeological purposes.

I have a contract with the State Archaeologist, State of Maryland to conduct photoarchaeological analyses supporting restoration of Fort Frederick. It appears to me that use of a cesium magnetometer might be valuable in conduct of the "ground truth" phases of my work.

My concept is that a magnetic survey be conducted of all possible foundation scars (if any) which are discovered in the interpretation of the color infrared aerial photography which I have had taken of the area.

My contract is small, and I am in no position to sub-contract for services of the type suggested. If you feel that this use of a magnetometer has promise, however, perhaps special arrangements could be made to conduct the recommended survey by the University of Pennsylvania.

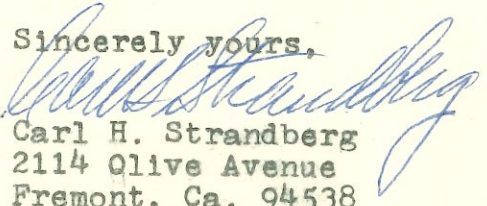
This application is one which I suggest has widespread application.

Four years ago, I conducted a project for the State of Minnesota (Minnesota State Historical Society) searching for the site of Fort L' Huillier. This was the first French fort constructed in the Upper Mississippi River Valley (this was in June, 1700). I found some dark traces which could have marked the location of the stockade. Nothing was found at these locations by the State Archaeologist when he walked over the area and examined the area visually. I re-examined the site, though, and am sure that "something" exists in the locations. Use of a magnetometer might be very rewarding here, too.

You may be familiar with my work in the Missouri River Basin. I have enclosed a copy of one of my earlier papers which describes work in this region, together with a copy of a color infrared photo of the "Clark Land" site. Note that the trace of a stockade can be seen inside the dry moat. If this military fortification is Norse in origin, iron must have been used in its construction - and this might be detected magnetically.

I was active in a project in Pennsylvania a few years ago which might be important in the American Revolution Bicentennial Administration work in Pennsylvania. I was searching for a graveyard in which several veterans of the Revolutionary War were buried. If you want more data on this project, please advise.

Sincerely yours,


Carl H. Strandberg
2114 Olive Avenue
Fremont, Ca. 94538

*Dr. Cotter -
Fort Frederick*

June 12, 1978 [8]

Mr. Carl H. Strandberg
2114 Olive Avenue
Fremont, California
94538

Dear Mr. Strandberg:

In regard to your request for a cesium magnetometer survey at Fort Frederick, Maryland, I am sorry to be so slow in replying. Our problem is that our summer schedule is pretty well filled, but various specific dates were uncertain until yesterday. Also, our magnetometers are being rebuilt and there have been delays in the completion of this work.

In view of these complications, I think that it would be best for you to proceed with the aerial photography, and if anything specific shows up, we might be able to work for a few days at the site. Beforehand, we would need copies of the aerial photographs and maps.

Sincerely yours,

Elizabeth K. Ralph

EKR/11

Contract - Md. Park Service.

Fort - stripped by CCC in 1930's

Want to locate village

Maybe money - expenses

Metal Detector - late June or July

Glenn Little = out of business

Photo Science - Washington, D.C.

Cost - \$1500 - \$2500

Wait & see

30 mi.

Fort Frederick - W of Hagerstown,
on Potomac R.

stone

1974

Dr. Elizabeth Ralph
M.A.S.C.A.
University Museum
Philadelphia, Penna. 19104

Dear Beth:

With this letter are some sherds from the famous excavations of Niah Cave. As you know, Fro and I have agreed to assist the Sarawak Museum, where we are able, in continuing these excavations and in interpreting the finds.

There are the usual dating problems. The sherds came from late Neolithic strata, but no carbon was associated. Carbon has been collected and dated from what appear to be similar strata elsewhere, but the correlation is not certain.

I would be grateful if you would acknowledge the receipt of these sherds by a note sent through David Crownover. David is handling my mail and will have my current address.

What would you say to a magnetometer survey of a site at Santubong, Sarawak? While excavating an early iron smelting site (slag all over the place) they encountered some Buddhist burial shrines. The one exposed is only a few feet below the surface and is about 10' x 10' square. The site seems to be extensive and is covered by small secondary forest growth and some old rubber trees. It could be cleared of undergrowth and many of the trees could be cut down if necessary. The slag deposits exposed are probably sufficient, for the moment at least, for the source of the ore is now the problem. However, the shrines were a surprise and are of considerable historical importance. If they could be located by magnetometer, it would certainly save a hell of a lot of digging. In fact, it is not practicable at present to contemplate digging the entire area in search of them.

I will be discussing this further with Fro. The financing of the project would be done out of Caltex support for the Indonesian projects.

All the best,

Bill

William Davenport

July 31, 1974

Dr. William Davenport

Dear Bill,

The sherds from Niah Cave, your letter, etc. arrived today. Mark Han will start the dating of the sherds in August, that is, tomorrow.

About the site at Santubong: the deposits of iron slags will make much stronger anomalies than the Buddhist burial shrines. Do you think that there are any to be found where there are not slags? If you want more iron slags to be found, that is an easy job for the magnetometer.

With best regards,

Elizabeth K. Ralph

EKR:dw