

SMITHSONIAN INSTITUTION
FREER GALLERY OF ART
WASHINGTON 25, D. C.

January 15, 1962

Miss Elizabeth Ralph
University of Pennsylvania
University Museum
33rd and Spruce
Philadelphia 4
Pennsylvania

Dear Miss Ralph:

I recently noted with much interest your paper on "Carbon-14 Dates for Sites in the Mediterranean Area", American Journal of Archaeology, Vol. 65, October 1961, pages 357-367. If you have an extra reprint I would like to receive one. I hope your paper can be covered in the next issue of IIC ABSTRACTS.

Sincerely yours,



Rutherford J. Gettens
Editor
IIC ABSTRACTS

RJG/jam

January 18, 1962.

Dr. Rutherford J. Gettens,
Freer Gallery of Art,
Smithsonian Institution,
Washington 25, D. C.

Dear Dr. Gettens:

I appreciate your interest in this article,
and am happy to send you a reprint, which
is enclosed.

In our new Applied Science Center for
Archaeology in the University Museum, we
are compiling files of references to
"scientific aids for archaeology", and
we have found the ILC ABSTRACTS to be
invaluable guides.

Sincerely yours,

R:LF

Elizabeth K. Ralph

July 20, 1962

Charles H. Olin
Analytical and Preservation Laboratory
Smithsonian Institution
Washington, D.C.

Dear Mr. Olin:

In answer to your letter of July 18, Miss Ralph has been on expedition in Europe since April 1st, and is not expected back in this country until the latter part of August. During her absence, I have been doubling as temporary supervisor of the Center, but will be leaving on vacation on July 28, planning to return late in August. And I'm afraid that the University Museum, where all activities of the Center, other than the Carbon-14 Laboratory, are located, is closed on Mondays.

During most of August, the Center will be functioning on a somewhat sketchy basis. Dr. Michael, Research Assistant in Dendrochronology, is in Europe, but his Student Assistant, Hamilton Carson, will be on hand during the latter part of the month. Mr. Mark Han, Research Chemist, who is working on the application of chemical analysis to archaeology and on thermoluminescence dating, will be at the Center during August. The Information Center, under Miss Flann, is open for inspection only during her absence. Mr. Eric Parkinson, Chemist, knows more about the preservation of antiquities than anyone else in the Museum, and will be at the Center during the rest of the Summer. If you are interested in the Carbon-14 Laboratory, I suggest you contact Mr. John Gruninger, my Student Assistant, who will be in charge of this laboratory in August.

As you can see, August is a shaky time at best. However,, if you can arrange to visit us after Labor Day, you will find everything functioning, and we should be quite happy to see you then.

Sincerely yours,

Robert Stuckenrath, jr.
Radiocarbon Laboratory

Analytical and Preservation Laboratory
Smithsonian Institution
Washington, D.C.
July 18, 1962

Miss Elizabeth Ralph
Department of Physics
University of Pennsylvania
Philadelphia, Pennsylvania

Dear Miss Ralph:

At present a laboratory is being organized at the Smithsonian. This laboratory will be concerned with the conservation of the museum objects and with analyses related to problems of archeology and technology.

I am writing to you about this matter because I am aware that you have a laboratory which is associated with the University of Pennsylvania Museum.

Would it be at all convenient to you for my wife and I - both she and I are work together at the Smithsonian in the establishment of this laboratory - to visit your laboratory.

We are planning to be in Philadelphia on Monday, July 30. If that is a convenient time for you, we would most appreciate the opportunity.

Sincerely yours,


Charles H. Olin

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
WASHINGTON 25. D. C.

November 2, 1962

*Ralph
Please find
him the
clope -
JBR*

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

Dear Dr. Rainey:

I was told recently of a small proton magnetometer that you had been using in an archeological dig in Italy. We are very much interested in securing a practical light-weight and reasonably priced detector for use above underwater sites. Would it be possible for you to furnish us the address of the manufacturer of your instrument and perhaps a brief description of it?

Any help you can give us would be deeply appreciated.

Very sincerely yours,



M. L. Peterson
Head Curator
Department of Armed Forces History

November 7, 1962

Dr. M. L. Peterson, Head Curator
Dept. of Armed Forces History
✓ Smithsonian Institute
Washington 25, D. C.

Dear Dr. Peterson:

Dr. Rainey has asked me to reply to your letter of November 6th concerning the Oxford proton magnetometer. I have included some literature about it, and more information may be obtained from Dr. E. T. Hall, President of the Littlemore Scientific Engineering Co., Railway Lane, Oxford. Its cost in England is approximately \$2,000, but it is subject to a fairly high tariff when imported to the U.S.A. (because of varian patents).

It is the best designed and most sensitive instrument of its type that we know of. We used it daily last spring and early summer in Italy, and it functioned admirably. There, on the plain of Sybaris, we were able to detect walls and archaeological deposits down to a depth of 5 meters because of the relatively high magnetism of the clay overlying these. Most of the archaeological features appeared as regions of minimum magnetism.

For your use over water, I suspect that you would need an accessory preamplifier which helps to compensate for the motion of the boat (moving cables cause spurious readings), but Dr. Hall will be able to give you more specific information about this.

The proton magnetometer is described in greater detail by M. J. Aitkin in Physics and Archaeology, Interscience Publishers, 1961 (\$6.00), and numerous surveys are reported in Archaeometry, vols. 3 and 4, published by the Research Laboratory for Archaeology and the History of Art, 6 Keble Road, Oxford (\$2.00 or 10s per copy). Dr. Hall is the director of this laboratory.

Dr. Peterson

Page 2
November 7, 1962

We shall have several field survey reports available in the near future and shall be glad to send you copies if you are interested in reports of land surveys.

Sincerely yours,

Elizabeth K. Ralph

EKR:pc

November 8, 1962

Dr. Rutherford J. Gettens
Smithsonian Institution
Washington 25, D. C.

Dear Dr. Gettens:

Almost two months have elapsed since ACS meetings in Atlantic City, and it now appears that it will take more time to find out whether or not we have some more corroded bronzes from sealed tombs at Gordion, Turkey. It is possible that Ellen Kohler has some hidden away in a trunk, but her busy teaching schedule has prevented her from finding time for the search.

At any rate, she and Dr. Young will be very glad to collect some additional ones for you during the course of their field work this spring and summer.

I hope that I shall have the opportunity of seeing you again before more years elapse.

Sincerely yours,

Elizabeth K. Ralph

EKR/deh

cc: Dr. Ellen Kohler
University Museum

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SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
WASHINGTON 25, D. C.

November 20, 1962

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

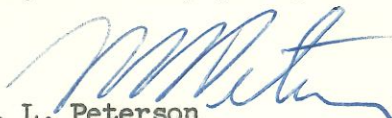
Dear Miss Ralph:

Thank you for your letter of November 7. It was very kind of you to furnish the information.

I had been given an erroneous idea of the price of the equipment which Dr. Rainey and his group used but I am familiar with the publications you mention. As a matter of fact, they are in our library and I have read the articles concerning the use of the proton magnetometer. I did not realize that the model used by Dr. Rainey was identical to those described. In any case, I would be very pleased if you would send me the field survey reports when they are available.

Your information and advice on the use of the magnetometer over water is greatly appreciated.

Very sincerely yours,



M. L. Peterson
Head Curator
Department of Armed Forces History

SMITHSONIAN INSTITUTION
FREER GALLERY OF ART
WASHINGTON 25, D. C.

November 20, 1962

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

Dear Miss Ralph:

I want to tell you how much I enjoyed having lunch with you and Eric Parkinson last week. It was wonderful to have a glimpse at the Carbon--14 Laboratory, and I am sorry I had to run away. As it was, Miss Jean Lee was quite irked at my tardiness. She, however, very kindly gave me full attention up to the moment of train time.


Meanwhile, my wife and I have received a printed invitation to the opening of the jade show on November 29. We plan to be there. Incidentally, the invitation and an unsigned note were addressed in a feminine hand which I do not recognize, unless it might have been yours. If it is not yours, will you do a little detective work and please tip me off? The invitation seems to require no answer, but I think we ought to inform someone that we will be there.

Your letter of November 8 awaited me upon my return. I think I have convinced Dr. Young of the importance of looking for new minerals on Gordion bronze artifacts, and I hope his inquiries in Turkey next summer will be fruitful.

I am also glad that Dr. Ellen Kohler has been alerted of our interest in the matter

I am looking forward to seeing you again on the 29th.

Sincerely yours,


Rutherford J. Gettens
Head Curator
Freer Gallery Laboratory

RG/dmc

C
O
P
Y

November 28, 1962

Dr. Rutherford J. Gettens
Freer Gallery Laboratory
Smithsonian Institution
Washington 25, D. C.

Dear Dr. Gettens:

Thank you very much for your kind letter, and our thanks to you for visiting us week before last.

The invitation to attend the opening of the jade show on November 29th came from the membership secretary, and she is glad that you are able to come. Unfortunately, I cannot be there because of too many conflicting things to do on Thursday--field trip and a class in the evening.

I hope, however, that we may meet again in the near future.

Sincerely yours,

Elizabeth K. Ralph (DR)

Elizabeth K. Ralph

EKR:dml

John P. ...

December 8, 1964

Dear Mario:

The radiocarbon laboratory has now reached the point where they can give some time to the South American samples. We have your sample from El Ranchon, but unfortunately they are both too small to do separately. I wonder if it would make sense to combine them. One is from the Zancudo phase, and the other is labeled Pozo 1 - N5 (100). If a combination would not be meaningful, perhaps you can get more charcoal from the site. But if we let more months go by without an adequate sample, there will be another long delay in view of the commitments in other areas.

Please let me know as soon as possible whether a combination is feasible.

With kindest regards,

Sincerely yours,

Alfred Kidder II
Associate Director

Prof. Mario Sanoja
c/o Dr. Clifford Evans
Division of Archaeology
Smithsonian Institution
Washington 25, D. C.

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
WASHINGTON 25. D. C.

December 4, 1964

Dear Ted,

Just got back from 2 months in Brazil. Missed you at Congress in Spain; do hope you do get down sometime. Try and let us know ahead of time, so we can have a calm quiet evening together.

Mario is now in France ; following Congress he went there to terminate his PhD (or something similar) and is leaving Dec. 20 for States where he will spend a few days in Washington. Coming via Rome and NY so we don't know his schedule.

Address until Dec. 20 - Prof. Mario Sanoja
Embajada de Venezuela
11 Rue Copernic
Paris XVI, France

Address in Venezuela -
Mario Sanoja
Dept. de Antropologia
Univer sidade de los Andes
Merida, Venezuela

If there is something you want to tell him, you could send it here marked c/o us and we shall deliver when he passes thru the end of Dec.

Best from both of us.

As ever,


Div. of Archeology

*Re The site S. of
L. Maracibo*

December 3, 1964

Dear Dr. Kidder:

We are getting our South American samples ready for processing, sometime next month, with luck. To the best of our knowledge, we have only a bare half-dozen on hand.

Sambaqui de Saquarema, Brazil

1- charcoal and shell, from Unit D, 7.0-7.5 m. This should complete the picture presented in our Date List VIII, now in Radiocarbon hands, where 1.0-1.5 m = 2106 + 73 BC; 2.0 m = 1955 + 67 B.C.; 6.8 m = 2357 + 69 B.C.; 8.0 m = 2121 + 73 B.C.; and 8.5 m = 2421 + 69 B.C.

Sambaqui de Gomes, Brazil

1- charcoal and sponge ("bonnes-baleia") from trench, 2.0-2.5m, in oyster shell stratum.

1- charcoal and shell from trench, 2.5-3.0m, in oyster shell stratum.

These will fill out the series from Date List VI, where 0.25-0.75 m = 2540 + 136 BC; and 1.50m = 2537 + 76 B.C.

El Ranchon site, on South coast of Lake Maracaibo, near Guachi River, State of Merida.

1- charcoal, M51-1, Zancudo phase. Too small.

1- charcoal, Qozo 1, N5(100). Too small.

On this last site, they were left by a gentlemen you brought around to see us May 15, 1964. From the pitiful amount of information we have, I can't tell whether or not the samples can be combined, and haven't even the man's name. Can you help us out with some more information on this?

And do you know of any other South American samples which should be dated, either material already on hand in the Museum, or likely to arrive in the very near future? Just seems a shame to let this chance go by for another year or two.

Bd.

Dr. Kidder

Smithsonian Institution



RADIATION BIOLOGY LABORATORY · Washington, D.C. 20560
12441 Parklawn Drive, Rockville, Md., 20852

November 25, 1970

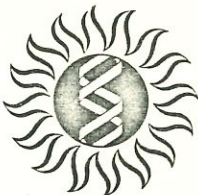
Dear Beth:

As to the enclosed, I've written Bennett (don't remember him from Adam) that you are much more "in" on matters thermoluminescent, and I have passed it on to you. Whee?

The lab is finally functioning. Two counters now agreeing with a suite of other-lab check samples, and the third counter muttering away in a language I can almost understand. The combustion system works, as does the methane system, we're busily making hydrogen from dead water for the methane synthesis, and my assistant just went into the hospital to have an ulcer removed. Sign of the times? I'll have to cut back on my drinking or start watering the gin, or I'll join him.

Cheers,

[ROBERT STUCKENRAST]



February 20, 1973

Miss Elizabeth K. Ralph
University Museum
33rd and Spruce Streets
Philadelphia, Pennsylvania

Dear Beth:

A bit later than anticipated, but here is the date for the Anticosti Island hearth sample collected by Kidder and Tuck last summer.

After a close look at the sample and some tooth-sucking, we did the nitration pretreatment to take care of the root problem--- boiled 10% NaOH 1 hour, washed; boiled 20 min in 50/50 6N HCl and chlorox, washed; boiled 5 min in 50/50 conc sulfuric and conc nitric acids, washed; aspirator dried, washed 2.5 liters acetone, aspirator dried; washed, dried.

All this left us with a rather smaller sample than that with which we started, and it sat on the shelf for better than a month to take care of any radon problems. Counting was done in a 700 ml counter at 60" Hg rather than the customary 90", but we let it soak for the long weekend just past, and it gobbled up some 5500 minutes of counting time. X² on the 100-minute printouts showed no drop in countrate over that time.

I've included one of our information sheets which you might pass on to Dr. Kidder for me so's I'll eventually have something more specific on the sample.

Let me know if you'd like Xerox copies of the counting data.

Cheers


Robert Stuckenrath
Radiocarbon Laboratory

2/22/73

Forwarded to Dr. Kidder
+ the information sheet

1240 ± 95

SI-1337. Anticosti I., P. Quebec

A.D. 710

Charred wood from site ca. 3km E of Southwest Point, Anticosti I., P. Quebec. Sampled from hearth 1m below surface. Coll. 1972 by J.A. Tuck and A. Kidder II; subm. by Kidder (Kidder and Tuck, 1972). Comment: small sample, counted at reduced pressure; nitration pretreatment for removal of root materials.

Cable address:
FREER, Washington, D. C.

SMITHSONIAN INSTITUTION
FREER GALLERY OF ART
WASHINGTON, D. C., 20560

Area Code: 202
Telephone: 381-5344

August 7, 1974

Dear Beth:

I'm enclosing a copy of my letter to John Rappolt concerning his Chung, as I think that you and Mark will have an interest in some of the comments.

Hope all is going well at the University Museum, and to see you soon.

Best wishes,

Sincerely,



John Winter
Chemist-Conservator
Freer Technical Laboratory

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

JW:jh
Enclosure

Cable address:
FREER, Washington, D. C.

SMITHSONIAN INSTITUTION
FREER GALLERY OF ART
WASHINGTON, D. C., 20560

Area Code: 202
Telephone: 381-5344

August 7, 1974

Dear Dr. Rappolt,

The photographs of your Chung, along with the draft, arrived last week, and I showed them to Dr. Thomas Lawton, our Assistant Director and Head of the Chinese Section. I will sum up his comments as follows.

Stylistically, one normally thinks of these bells as being of the Eastern Chou or Warring States periods - the 7th century or later would be typical. The earliest examples of related bells appear to have come from a tomb at P'u-tu-ts'un in Shensi province. The tomb was unearthed in 1954 and the report appeared in K'ao-ku hsüeh-pao 1957, I, pp. 57ff. See also William Watson: Archaeology in China, p. 24 and plates 67-69. On the basis of inscriptions on bronzes found with the bells, the tomb has been dated to the reign of King Mu, 10th century B. C. Rather early for that type of bell.

Dr. Lawton also makes the following points about your manuscript. With regard to the article in Kaogu 1974, 1, pp. 1-5, 25 bronze objects were found at Ma-wang village in 1973 during earth levelling operations. Ten of the objects were bells; they were placed together in the Southwestern corner of a pit, except for one small bell which was by itself. By the time the authorities arrived, the vessels had been removed and the shape of the pit was unclear. The quotation from Kuo Mo-jo refers to quite another cache of bronzes; it is taken from an article by Kuo published in 1965. Since the Ma-wang pits were found in 1973, Kuo could not possibly have been referring to those bronzes. The Western Chou date depends upon the style of decoration and information in inscriptions on bronzes other than bells. With regard to Wen-wu 1966, No. 4, pp. 4-5, the bell in Figure 13, p. 5 is given an Eastern Chou date, i.e., after 771 B.C.. It was found among some 60 objects in the vicinity of Ning-hsiang, Hunan province.

One or two lesser points: It is incorrect to write "Emperor Yu Wang". One should put either "Yu Wang" or "King Yu"; there was no Chinese Emperor at this stage in Chinese history. The two Chinese journals you cite are romanized Kaogu and Wen-wu; these are the versions favored by the Chinese publishers, and are romanized in the pinyin, rather than the Wade-Giles, system. The Chinese archaeologist is Ku^o Mo-jo.

Is it possible for you to have someone go through the Chinese historical side of your paper for you? For the non-specialist, the subject is about as full of pitfalls as physics would be to a non-scientist.

On my own account, I would comment as follows: The thermoluminescent result is of course excellent evidence for the authenticity of your bronze. I remain unconvinced at present that it demonstrates that you have an unusually early Chung of this type. Thermoluminescent dating is subject to many sources of error. The thermoluminescent signal in a buried object will receive a contribution (typically about 15% of the total, but highly variable) from gamma radiation in the burial medium, and this is inaccessible to measurement in the present case. The precision of a TL result (in the sense of its reproducibility) is usually of the order of only $\pm 5\%$, and in addition there are many sources of error not taken account of in this figure. In my article in Dating Techniques for the Archaeologist (which you quote) I analyze the MASCA calibration chart then in use and show that the overall accuracy is around $\pm 20\%$. It may be (I don't know) that this chart has been replaced by an improved version; on the other hand, it is based on the assumption that the total radiation experience of the material is proportional to the alpha count rate as measured. This assumption is only likely to be even approximately true for materials of similar composition in similar burial circumstances: your bronze core is an unrepresentative material from a different part of the world. In any event, a 20% error in the TL date already brings the later limit to perhaps 800 B.C.: not so far from the stylistic dates suggested.

Bearing in mind the above comments, I feel that your statement (p. 5) "The uncertainty in the TL date is ± 350 years" needs definition. What kind of error is this and how was it assessed?

The fact that the bell is almost pure copper is interesting; though I'm not quite sure what significance it has, if any. I rather think, however, that Mr. W. T. Chase of this lab may be interested in the object, especially with regard to its composition. I will therefore take the liberty, if I may, of retaining your photographs to show Mr. Chase when he returns from vacation later this month.

Sincerely yours,



John Winter
Chemist-Conservator

Dr. John P. Rappolt
Department of Physics
University of Pennsylvania
Philadelphia, Pennsylvania 19104

Copy: Dr. E.K. Ralph.



May 9, 1979

Dr. Elisabeth K. Ralph
Radiocarbon Laboratory
University of Pennsylvania
Department of Physics, DRL/E1
Philadelphia, Pennsylvania 19104

Dear Colleague:

Beth

In the past several years, archaeological demands for radiocarbon dates have been increasing, yet dating facilities have lagged behind that demand. New labs, of course, are expensive and do not come on-line overnight. Of the existing laboratories in the United States, perhaps only half spend much of their time dating samples for archaeologists, and these are seldom in a position to increase their capacity. Laboratory costs are rising at an uneasy rate (have you purchased any silver nitrate lately?), and several laboratories may be in very serious financial straits. Many laboratories have been, or soon will be, forced to establish or raise fees for their services.

Following this, it is becoming obvious that we can spend our time dating only those "first-order" samples of indubitable association, those selected with great care in order to provide the greatest amount of information with the least number of samples. "Second-order" samples rapidly are becoming a thing of the past, for we simply haven't the extra counting time available. Certainly, much closer cooperation, from excavation planning to sample selection, between the archaeologist and the laboratory director is now a necessity.

At the behest of the Anthropology Program of the National Science Foundation, a somewhat amorphous ad hoc committee of the Society for American Archaeology has been formed to discuss and advise the Society on these matters. Lest this committee perpetuate the sins of committees in general, a look at existing services, facilities, and preferences of radiocarbon laboratories is in order before riding off in all directions; hence, the following questionnaire.

We trust the format is sufficiently brief and succinct as to avoid wasting much of your time, yet full enough to serve our purpose. We would appreciate your reading it over, answering the questions, and returning it to me at your earliest convenience. Any additional comments you have would be welcomed. If you are interested, we can provide you with a compilation of the results and, in any case, you will be advised of the committee's recommendations to the Society.

Thank you.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Bob', written in a cursive style.

Robert Stuckenrath
Radiocarbon Laboratory