PRINCETON UNIVERSITY
PRINCETON, NEW JERSEY

DEPARTMENT OF GEOLOGY
CABLE ADDRESS: GUYOT, PRINCETON, N.J.

May 10, 1961

Dr. Froehlich Rainey, Director
The University Museum
University of Pennsylvania
Thirty-Third and Spruce Streets
Philadelphia 4
Pa.

Dear Sir:

Professor Sheldon Judson, who is out of town on a field trip, has asked me to write you in answer to your letter of May 5 that he will be glad to be present at 10 a.m. on June 1st at the meeting in your office.

Yours very truly,

Margaret R. Law

Margaret R. Law, Secretary

March 15, 1962

AIR MAIL

Dr. Sheldon Judson
Francesco Daverio 41
Roma, Italia

Dear Sheldon:

Many thanks for transferring the equipment to Lerici.

A gradiometer is a differential proton magnetometer. Has two coils, one close to ground, one 5 ft. above, and measures difference in magnetic intensity. It's simpler and faster to use than proton magnetometer.

Thank you too for your kind invitation. I think that I'd better stick to my Monday landing because of customs problems with the instruments. Am hoping that Lerici will bail me out if I get bogged down.

Couldn't you visit us en route to Sicily? We (Rainey, Don Brown, Dimick? and I) will be billeted in The Hotel Miranda, Torre Cerghiara, Cosenza.

Shall look forward to seeing you there or at some odd moment in Rome later in the spring.

With best regards,

E. K. Ralph

EKR/deh

PRINCETON UNIVERSITY
PRINCETON, NEW JERSEY

DEPARTMENT OF GEOLOGY
CABLE ADDRESS: GUYOT, PRINCETON, N.J.

Via Fonteiana 162
Rome, Italy

Dr. Elizabeth Ralph
Department of Physics
University of Pennsylvanaia
Philadelphia, Pa.

Dear Beth:

I'm currently back in Italy working in the area north of Rome on things recent from a geologic point of view. I am writing to ask if you have any interest in some Carbon 14 samples that are turning up in a current excavation which I have put under way in cooperation with the British School.

The site is another of Judson's river sites. This one however begins in the late Bronze age and goes on up into Etruscan some place. So the span now looks to be from about 1000 BC through (Late Bronze) through Villanovan (Iron Age at abut 800) and into Etruscan at about 400-500 B.C. It looks as if we would have very good archaeologic control on the various horizons, The Carbon is in the form of charcoal throughout and in the Bronze Age some well-preserved, but uncharred bone.

Have just written Bob Hargraves to see if he will do some magnetics on a hearth or two which are turning up. The archaeology is being done by a young chap at the British School.

Any chance of your being over this way again? I hope so. Our address is above and our phone number which you should put into your little book along with it is

58-25-15.

I presume you will be going back to the Sybaris site. You need a good douser to help you.

Best regards to you.

Shel

Sheldon Judson

9 January 1967

P.S. I'm collecting C14 samples against the possibility of your interest.

S

Penfield Lecturer of Amer. Geol.

January 13, 1967

Dr. Sheldon Judson
Via Fonteiana 162
Rome, Italy

Dear Sheldon:

Thank you for your good letter from Italy. I returned in September after a stint of 6 months, and shall probably be back in the spring, but plans are not yet definite.

Your new river site sounds very interesting, but I hesitate to say definitely that we shall be able to process your C-14 samples. Our backlog is more hopeless than ever - over a year behind. At any rate, it doesn't hurt to collect them, and if we can't date them, perhaps a lab which is more geologically orientated could. The charcoal sounds fine, but uncharred bones are frequently contaminated and also very large quantities are required - at least 300 grams.

Hope to see you in Rome.

With best regards

EKR:LF

Elizabeth Ralph

March 28, 1972

Professor Sheldon Judson, Chairman
Department of Geological and Physical Sciences
Guyot Hall, Princeton University
Princeton, New Jersey 08540

Dear Shel,

Your figures from Teledyne gave me some Monday-morning exercise, but I really do not know what to say about the dates except that for these very small samples, they dated them as carefully as possible. Also, they gave you a generous amount of counting time for each one.

I have calculated average values and uncertainties according to our system (copy enclosed as well as work sheets. In this system, I have given equal weight to each 1000-(or slightly more) minute interval. This makes my averages differ slightly but not significantly from Jim Buckley's. They are as follows:

No.	C-14 Dates B.P. 1950	
	5568 half-life	5730 half-life
I-6109	1634 ± 85	1683 ± 88
I-6110	476 ± 60	491 ± 62
I-6126	373 ± 149	384 ± 153

Since the two original counting runs for I-6126 were not statistically consistent, I have given this sample a greater uncertainty. Also, it was the most undersized of the three and is less reliable for that reason too. Since I-6109 was the largest, it might be considered the most reliable.

If there is anything else that I can try to do with these data, please let me know.

With best regards,

Elizabeth K. Ralph

R/rs
Encls.

cc. Mr. James Buckley
Teledyne Isotopes
Westwood Laboratories
60 Van Buren Avenue
Westwood, N. J. 07675

Princeton University DEPARTMENT OF GEOLOGICAL AND GEOPHYSICAL SCIENCES
GUYOT HALL
PRINCETON, NEW JERSEY 08540

March 22, 1972

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

Dear Beth:

Here are some counts by Teledyne on some samples run for us. Could you take a look at the figures and tell me what you think about the ages?

Best regards,

Sheldon Judson
Chairman

Enclosures (2)

Teledyne Isotopes
W.O. No. 3-3884-112
Princeton University

Isotopes No.	Sample No.	Date	Ctr	Bkg	D.F.	Δ t	A.C.	Mod.	mils - δ C^{14}	Age B.P. (1950)
I-6109	Sample 1	12/20/71	s.	0.846	0.745	1330.2	7789	8.333	193 ✓	1720 B.P.
"	"	2/4/72	s.	0.865	0.745	2249.0	13526	8.461	184 ✓	1635 B.P.
I-6110	Sample 2	12/27/71	s.	0.846	0.568	2471.5	13134	8.333	56 ✓	460 B.P.
"	"	1/28/72	s.	0.865	0.568	3657.0	19629	8.461	63 ✓	520 B.P.
I-6126	Sample 4	1/4/72	s.	0.855	0.322	2052.0	7049	8.333	42 39	345 B.P.
"	"	2/18/72	s.	0.865	0.322	1769.3	6027	8.461	66 ✓	545 B.P.

TELEDYNE ISOTOPES

WESTWOOD LABORATORIES

50 VAN BUREN AVENUE

WESTWOOD, NEW JERSEY 07675

(201) 664-7070 TELEX 134474

February 22, 1972

Dr. Sheldon Judson
Department of Geological & Geophysical
Sciences
Guyot Hall
Princeton University
Princeton, New Jersey 08540

Dear Dr. Judson:

P. O. C 12337
Subject: W. O. No. 3-3884-112

Here at last are the radiocarbon data you requested. These are the smallest samples that we can date and samples 3 and 5 are being returned under separate cover because they are just too small. Your note of October 29 stated that you could supply additional material for sample 6. I am holding the gas from the first combustion and will complete the work when we receive the additional no. 6.

I attempted to treat all the samples with hot NaOH solution for the removal of humic acids, but the treatment was very short because of the soluble nature of the charcoal. The treatment lasted for five to ten minutes, whereas our standard treatment is for several hours. The samples were also treated for carbonate decomposition before combustion.

If you have any questions concerning these results, please contact us. We shall be happy to help in any way possible.

Sincerely yours,

James Buckley

JB:pob
Encl.

I - 6109 Sample 1

					I_o
12/20/71	5,856	5,010 ÷ .745 = 6,725	6,828	-55	8.333
2/4/72	6,014	5,149 ÷ .745 = 6,911	6,911	+28	8.461
"	6,014	5,149 ÷ .745 = 6,911	6,911	+28	"
	5,961		6,883	2+1+1	

$\chi^2 = 0.77$ $P(\chi^2) \sim 0.7$ $\sigma_s = 051$

$I_o = 8.461 \pm .052$

6.883
.073

6.810	1.242	.0941	1741
6.956	1.216	.0849	1571
			170

B.P. 1950

1656 , 1634 ± 85 ; (5568 half-life)
1683 ± 88 (5730 ")

12/20/71	1701
2/4/72	1602
"	1602
	1635

I - 6110 Sample 2

				I_o
12/27/71	5,314	4,468 ÷ .568 = 7,866	7,987 +35	8.333
	5,314	4,468 ÷ .568 = 7,866	7,987 +35	"
1/28/72	5,368	4.503 ÷ .568 = 7,928	7,928 -24	8.461
"	5,368	" 7,928	7,928 -24	"
"	5,368	" 7,928	7,928 -24	"
	5,346		7,952 Σ -2	

$\chi^2 = 0.78 \quad P(\chi^2) \sim 0.7 \quad \sigma_s = 035$

$I_o = 8.461 \pm .052$

7.952
.062
7.890 1.072 .0302 559
8.014 1.056 .0237 439
120

B.P. 1950
499, 476 ±60 (5568 half-life)
491 ±62 (5730 "

12/27/71	461
"	461
1/28/72	522
"	522
"	522
	498

I-6126 Sample 4

					I_0
1/4/72	3,435	2,580 ÷ .322	8,012	8135 +81	8.333
"	"	"	8,012	8135 +81	"
2/18/72	3,406	2,541 ÷ .322	7,891	7,891 -163	8.461
	3,421			8,054	

$\chi^2 = 11.6$ $\quad P(\chi^2) << 0.1$ $\quad \sigma_n = 141$

$I_0 = 8.461 \pm .052$

8.054
.150
7.904

7.904	1.070	.0294	544
8.204	1.031	.0133	246
			298

B.P. 1950

395, 373 ±149 (5568 half-life)
384 ±153 (5730 ")

1/4/72	315
"	315
2/18/72	559
	396