

Appendix D

The Gove/Harbottle Proposal on Carbon Dating  
the Shroud

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DEPARTMENT OF PHYSICS  
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May 18, 1979

The Rev. Dr. R. H. Dinagar  
2317 46th Street  
Los Alamos, N.M. 87544

Dear Bob:

You will have now received my letter of April 30, 1979 which included copies of the letter I sent to the Archbishop of Turin on behalf of the Rochester Group (University of Rochester, University of Toronto, General Ionex Corporation and the U.S. Geological Survey) and the Brookhaven National Laboratory group along with a description of the procedures that would be followed to date a Shroud sample by the two groups independently. Since then Dr. Meyer Rubin (USGS) and I have met with Drs. G. Harbottle and R. W. Stoenner (BNL) to agree on other details of how we would proceed with the radiocarbon dating of a Shroud sample.

We would propose to use *half* of the Raes' sample taken six years ago from the *main body* of the Shroud. It is our understanding that this piece of the cloth weighs approximately 110 milligrams. Half of this cloth (55 mg) will be divided between the BNL group and the Rochester group as shown in the table below

	Cloth Wt (mg)	Ratio $\frac{\text{Carbon}}{\text{cloth}}$	Carbon Wt (mg)
BNL	30	0.40	12.0
Rochester	25	0.25	6.3

Both groups would independently follow the pre-treatment method described by Harbottle et al in the documentation I sent you. Following this the BNL group would convert the sample to CO<sub>2</sub> as described on pages 4 and 5 of their paper 'Carbon 14 Dating of Small Samples by

Proportional Counting - Harbottle, Sayre and Stoenner' and the Rochester group would char the sample as described on page 5 of their paper 'A Method for Dating the Shroud of Turin - Elmore et al'. Within a period of approximately two months after receiving the Shroud sample the two groups will have independently ascertained the age of this particular Raes' sample to an accuracy of  $\pm 150$  years or better. The CO<sub>2</sub> gas sample containing 10 mg of carbon used by the BNL group can be made available to any other laboratory that can employ such a small sample for a third independent age determination. The 6.3 mg carbon equivalent sample requested by Rochester is sufficient for several separate measurements at Rochester if necessary. It will be carefully husbanded but any carbon consumed in the measurement is irretrievable.

The two groups (BNL and Rochester) have agreed that

1. They will not be required to follow any kind of blind dating procedure.

2. No third party will be involved in sample preparation.

3. They will be free to publish their results independently of the group of scientists that performed the various measurements on the Shroud in October 1978. In particular they will not be bound to observe the October 80 or October 81 limitation included in the contract signed by the members of the Shroud of Turin Research Project Inc.

We will, of course, be happy to cooperate fully with your Carbon-14 Dating committee. If you recommend that an observer representing the Archbishop of Turin or of your committee be present during the sample division and preparation and during the measurements themselves I am sure mutually agreeable arrangements can be made. We will be happy to have the results of our measurements included in the publication by the Shroud of Turin Research Project Inc which you hope will be ready by Easter 1980 in addition to any prior publication we may decide on.

I should emphasize, as I did in my letter to the Archbishop, that any measurements on radiocarbon dating the Shroud at both laboratories would have to be carried out in a manner that was compatible with other commitments of those laboratories.

Let me repeat that we regard the formation of your committee at the request of the Turin authorities as a very positive evidence that, at long last, the Shroud of Turin's true age will be established in the near future.

With best wishes.

HEG/bc

cc; R. Beukens

D. Elmore

G. Harbottle

A. E. Litherland

K. H. Purser

M. Rubin

H. D. Sox

Yours sincerely,

H. E. Gove

for the BNL and Rochester groups

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