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# Ancient TL

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No. 16 Summer, 1981

"But in science the credit goes to the man who convinces the world not to the man to whom the idea first occurs."

Sir Francis Darwin

## IN THIS ISSUE . . .

Instructions to Contributors

Light Bleaching of Archaeological Flint Samples: A Warning

J. Huxtable

TL Laboratory Survey Results

A Letter to Ancient TL Readers . . . . . K. Stammers

Third Specialist Seminar on Thermoluminescence Dating- first circular

Some Recent Bibliography

## INSTRUCTIONS TO CONTRIBUTORS

Contributions should be sent to the editor at the letterhead address. The major subjects of interest are new experimental techniques and equipment, data on various TL materials, data and information on dosimetry and radioactivity determinations and helpful laboratory hints. The newsletter is also intended to provide a vehicle through which TL researchers may communicate with a large constituency of colleagues.

Manuscripts should be submitted in camera ready form according to the following guidelines:

1. Text: Minimum width 6 inches (15 cm), Maximum width 7 inches (18 cm).  
Single-spaced except between paragraphs when desired.
2. Include title, author(s), affiliation and address (these will be retyped for the heading).
3. References: Follow the format of Archaeometry. References to well known works in the field may be omitted.
4. No footnotes.
5. Abstracts should be avoided whenever possible.
6. Acknowledgements of funding agencies may be placed as the last sentence in the text.
7. Tables and figures should be sent the same size as you wish them to appear in print. If small, you may insert them directly within the text. If large, they may be on separate sheets to be inserted by the editor in an appropriate place. Captions may be included at the discretion of the contributor.

The preparation of this document was supported in part by National Science Foundation grant BNS 76-82645 and in part by subscription fees.

# LIGHT BLEACHING OF ARCHAEOLOGICAL FLINT SAMPLES: A WARNING

J. Huxtable

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Some preliminary bleaching experiments have been done using an Oriel Solar simulator lamp to bleach fine grain discs of flint, which had been prepared from flints which had had their outer 2 mm of surface removed and only the inner part used for sample preparation. The simulator uses a 300 watt Xenon lamp which produces a collimated beam over a 2 x 2 inch square target (see Figure 1). The samples are placed in the target plane 2 inches from the collimator lens. The beam can be filtered to match the terrestrial (Air Mass one or two) or outer space (Air Mass zero) solar spectrum. In this application, the Air Mass two filter corresponding to sunlight for middle latitudes was used and spectral characteristics of this filter compared with the solar spectrum are shown in Figure 2 (normalised to one solar constant).

Bleaching experiments were begun on flint from Abri Vaufrey which had been collected during excavation and immediately transferred to an opaque black plastic bag and not exposed again except to red light in the laboratory. These showed that bleaching of natural TL occurs rapidly at first, and then more slowly as length of bleaching time increased, e.g. Abri Vaufrey (e3) as shown in Figure 3a. (Different flints bleach by different amounts of course but there is the general trend of a rapid fall followed by a slower one).

Besides these bleaching experiments on natural TL, similar bleachings were done on natural plus artificial beta dose and second glow beta-dosed discs and the bleaching responses for these different sets of discs were the same (within 3%).

These bleaching experiments were then extended to archaeological material which had been submitted for dating but which had been exposed to unknown amounts of light before arriving at the laboratory, e.g. for classification and drawing; the laboratory exposure to light has been the same in all cases.

Bleaching response of natural TL discs was compared with bleaching response of second glow beta-dosed discs ( $\beta'$ ) as a routine measure and differences between these two sets of bleachings have been found, by more than 10% in one case (see Figure 3).

For one archaeological layer from La Cotte where 5 flints have been dated, two of the five showed greater bleaching on  $\beta'$  discs than on natural TL discs, one by 6% and the other by 12%, suggesting that these two flints may have lost some natural TL due to light exposure. The expectation that this would be avoided because of light absorption in the outer discarded 2mm layer may not be true. These 2 discrepant flints have provisional ages approximately 20% lower than the other flints in the layer, but their environmental dose is at the moment based on alpha counting and flame photometry measurements; when gamma spectrometry evaluation of soil doses is available it may realign the five as the environment is very complex. The whole flint had been crushed to extract samples from the La Cotte flints so it was not possible to do any transparency measurements on the original.

The amount of data collected so far for a dozen flints is far too small for any definitive analysis but it may indicate that some flint in solid form can be bleached before it arrives at the laboratory for dating. Until further work disproves this conclusion, it would be prudent to treat all flints with care and collect them for dating programs with minimal exposure to light.

FIG. 1

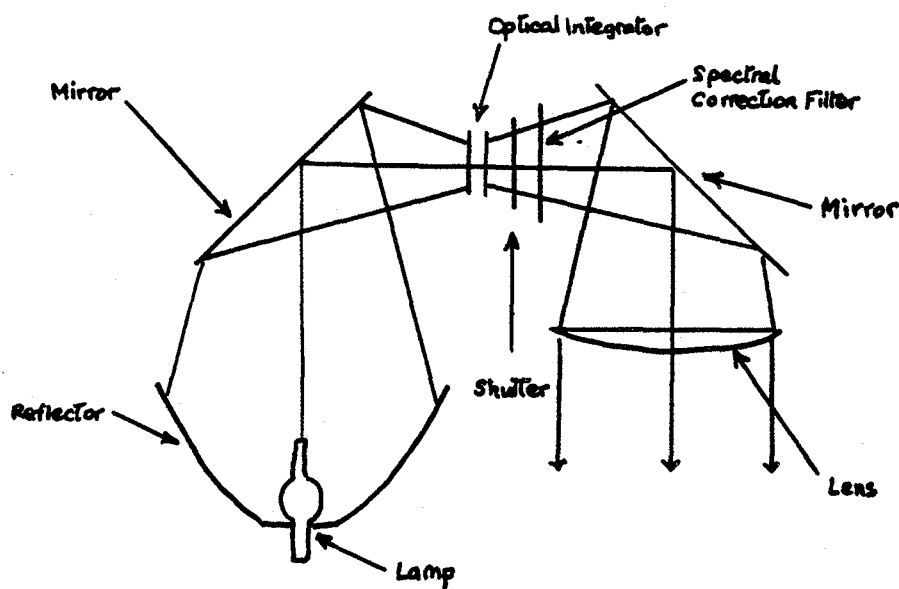


FIG. 2

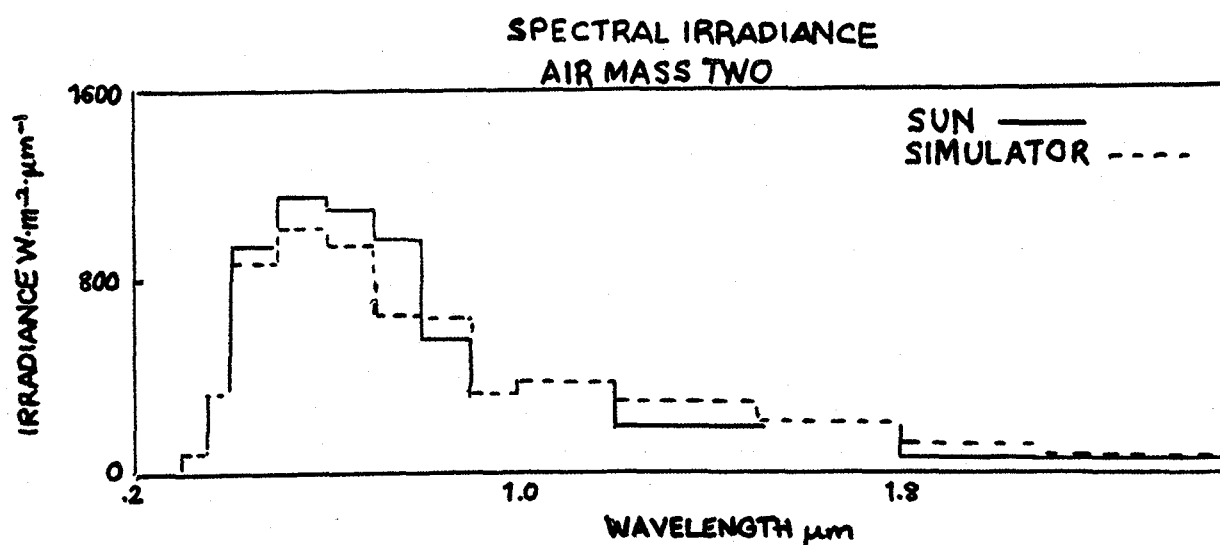
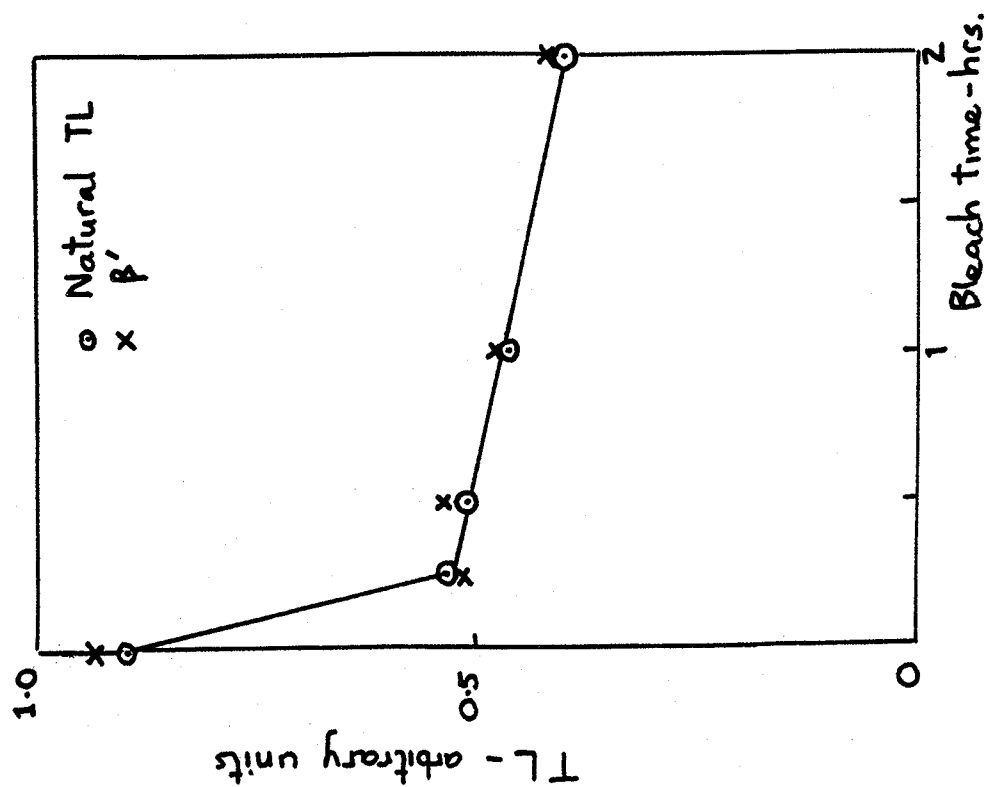


FIGURE 3

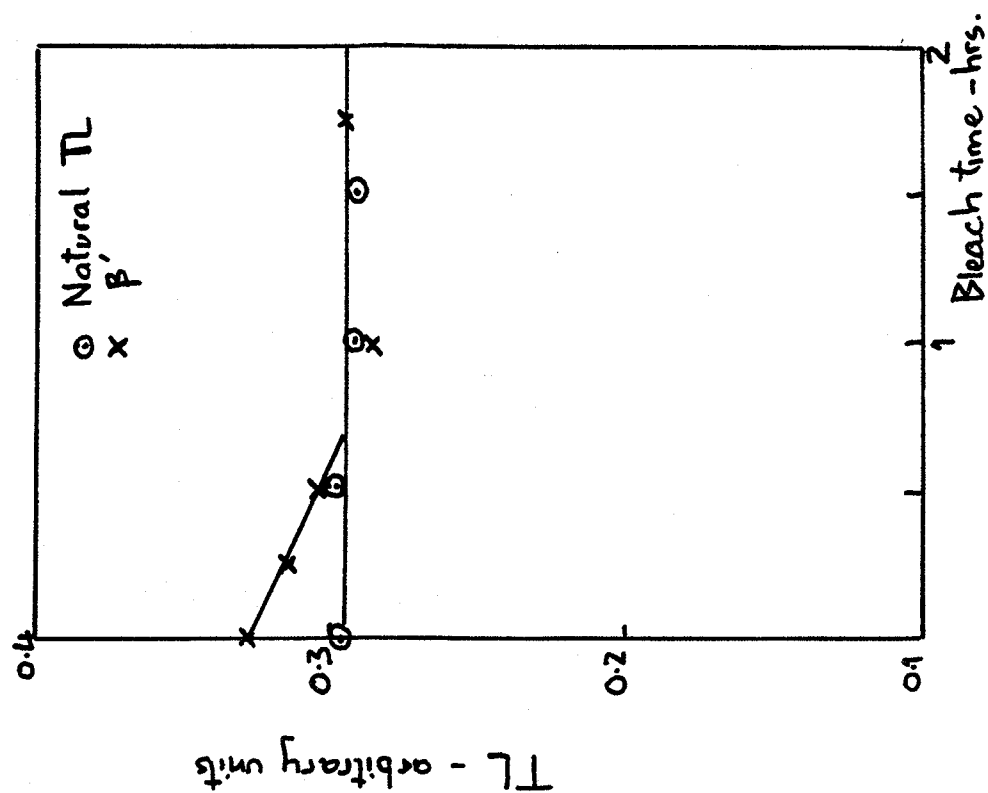
A

Abri Vaufray (2-3)



B

La Cotte (2-3)



## TL LABORATORY SURVEY RESULTS

(Map on page 9)

This issue of Ancient TL contains the results of the recently conducted TL laboratory survey. Each entry consists of the laboratory address, including the name of one of the researchers, followed by some general information on the research interests of the group. In order to present a nearly comprehensive listing, some "non-responding" laboratories are included based on the knowledge of the editor and information supplied by various readers.

The location of each laboratory is shown on the attached map. For convenience, the map has been divided into six sections labeled A through F.

A = North America

C = Europe

E = Australia/Indonesia

B = South America

D = Asia

F = Africa

Each laboratory has been given an alphanumeric designation- the letter indicates the appropriate map section and the number shows the specific location within that section.

Undoubtedly, there are some TL laboratories which have been inadvertantly overlooked. It is hoped that those readers who identify deletions and/or errors will send such information to the editor. In this way, an addendum may be compiled for publication in a future issue of the newsletter.

Special thanks go to Joan Zimmerman for suggesting the use of the TL laboratory map and to Ann Wintle for providing much of the information on the Eastern European laboratories.

<u>Lab Address</u>	<u>Archaeological Dating</u>	<u>Geological Application</u>	<u>Radiation Dosimetry</u>	<u>Other Interests/Comments</u>
<b><u>NORTH AMERICA</u></b>				
A1 Washington University, Center for Archaeometry, St. Louis, Mo. 63130 (S. R. Sutton) U.S.A.	X	X		Heated rocks, meteorites
A2 University of Missouri, Dept. of Anthropology, 210 Switzler Hall, Columbia, Mo. 65201 U.S.A. (Dr. R. M. Rowlett)	X			Primarily heated lithics (ceramics only in special cases); testing hypotheses for archaeological interpretation.
A3 Brookhaven National Laboratory, Long Island, New York U.S.A. (Dr. P. Levy)		X		
A4 Museum of Fine Arts, Research Laboratory, 465 Huntington Ave., Boston, Mass. 02115 (L. Van Zeist) U.S.A.	X			
A5 Detroit Institute of Arts, Research Laboratory, 5200 Woodward, Detroit, Michigan 48202 U.S.A. (Dr. Gary W. Cariveau)	X		X	Authentication, museum problems. Commercial TL for public institutions and private parties for a fee.
A6 University of Miami, Geoarchaeological Res., P. O. Box 249176, Miami, Florida 33124 U.S.A. (Dr. J. Stipp)	X	X		Arch. and deep sea sediments
A7 University of Florida, Dept. of Anthropology, Gainesville, Florida 32611 U.S.A. (Dr. B. Purdy)	X	X		Chert dating
A8 University of Utah Medical Center, Div. of Radiobiology, Bldg. 351, Salt Lake City, Utah 84112 (Dr. E. Haskell) U.S.A.	X	X	X	Laboratory expected to serve a variety of functions once it becomes operational in 1981.
A9 University of Washington, Dept. of Mining, Metallurgical and Ceramic Enigneering FB-10, Seattle, Washington 98195 (Dr. T. G. Stoebe) U.S.A.			X	

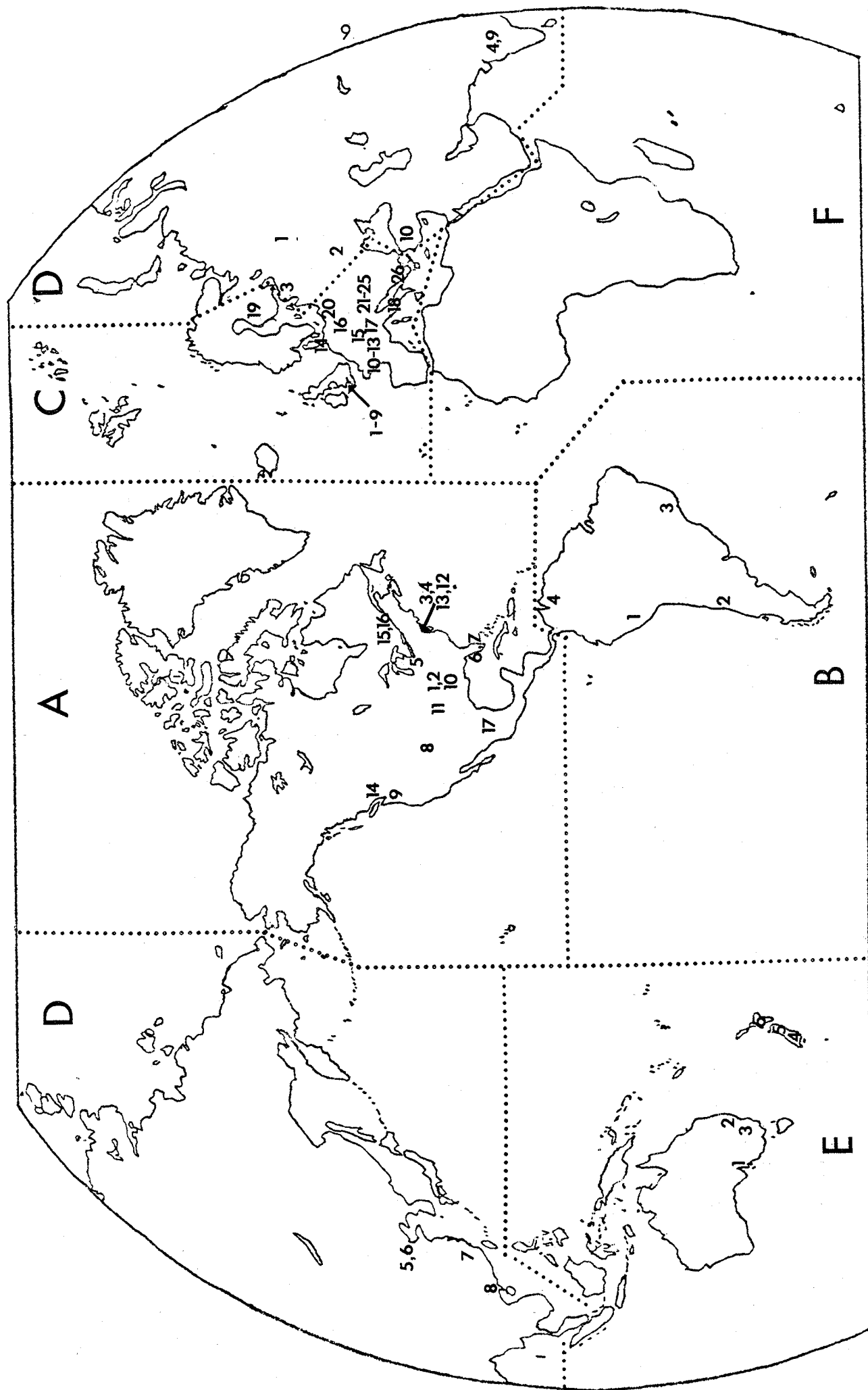
Lab Address	Archaeological Dating	6	Geological Application	Radiation Dosimetry	Other Interests/Comments
<u>NORTH AMERICA</u>					
A10 University of Arkansas, Dept. of Chemistry, Fayetteville, Arkansas 72701 U. S. A. (Dr. Derek Sears)			X		Meteorites
A11 Aerospace Center, Kansas University, Lawrence, Kansas U. S. A. (Prof. E. Zeller)			X		
A12 Peabody Museum, Harvard University, 11 Divinity Avenue, Cambridge, Mass. 02138 U.S.A. (Dr. J. Ericson)	X				
A13 Museum Applied Science Center for Archaeology, University of Pennsylvania, Philadelphia, PA. 19104 U.S.A. (Dr. S. Fleming)	X				
A14 Simon Fraser University, Dept. of Physics, Burnaby, B. C. V5A 1S6, CANADA (Dr. D. Huntley)	X		X	X	Sediments
A15 McGill University, Dept. of Physics, 3600 University St., Montreal H3A 2T8, CANADA (Prof. F. Hedgcock)	X				Solid state and TL
A16 Universite du Quebec a Montreal, Departement des Sciences de la Terre, Montreal, Quebec, CANADA H3C 3P8 (Michel Lamothe)			X		Quaternary Sediments
A17 UNAM, Instituto de Fisica, Apartado Postal 20-364, Mexico 20, D. F., MEXICO (M. C. Augusto Moreno Moreno)	X				
<u>SOUTH AMERICA</u>					
B1 Universidad Nacional de Ingenieria, Dept. de Fisica, Casilla 1301, Lima PERU (Dr. E. Carranza)	X		X	X	Mossbauer lab at same location
B2 Pontificia Universidad Catolica de Chile, Dept. Quimica Analitica, Casilla 114-D, Santiago CHILE (Dr. A. Roman)	X				
B3 Centro Brasileiro de Pesquisas Fisicas Av. Wenceslay Braz 71, Rio de Janeiro BRAZIL (Drs. J. Danon and G. Poupeau)	X		X		
B4 Instituto Venezolano de Investigaciones Cientificas, Apdo 1827, Caracas 1010A VENEZUELA (Dr. J. Vaz)			X		
<u>EUROPE</u>					
C1 Research Lab. for Archaeology, Oxford University, 6 Keble Rd., Oxford OX1 3QJ ENGLAND (Dr. M. Aitken and Mrs. J. Huxtable)	X		X	X	Emphasis on arch. dating
C2 British Museum Research Laboratory, London WC1B 3DG ENGLAND (Dr. S. Bowman)	X			X	Authenticity testing
C3 University of Birmingham, Dept. of Physics, P.O.Box 363, Birmingham B15 2TT ENGLAND (Dr. S. Durrani)			X		Meteorites
C4 The Godwin Laboratory, University of Cambridge, Cambridge CB2 3RS ENGLAND (Dr. A. Wintle)			X		Sediments, particularly loess
C5 Museum of Archaeology, Old Fulling Mill The Banks, Durham DH1 3EB ENGLAND (I. Bailiff and Prof. D. Wright)	X			X	Emphasis on predose dating

Lab Address	Archaeological Dating	Geological Application	Radiation Dosimetry	Other Interests/Comments
<u>EUROPE</u>				
C6 National Museum of Antiquities, West Granton Rd. Edinburgh EH5 1JA SCOTLAND (Dr. J. Tate)	X			
C7 School of Archaeological Sciences, Bradford Univ. Bradford, West Yorkshire, ENGLAND (D.C.W.Sanderson and S. E.Warren)	X	X		Burned stones, instrumentation and characterisation studies
C8 School of Engineering and Applied Science Univ. of Sussex, Falmer, Brighton, Sussex BN1 9QT ENGLAND (Dr. S.W.S. McKeever)	X	X	X	TL mechanisms in alkali halides
C9 Paisley College of Technology, Physics Dept. High St., Paisley, Renfrewshire, SCOTLAND (Dr. F. Placido)	X			TL testing for fire-damage in concrete
C10 Centre des Faibles Radioactivites, C.N.R.S. 91190 Gif sur Yvette, FRANCE (Dr. G. Valladas)	X	X	X	ISR
C11 Laboratoire de Recherche des Musees de France, Palais du Louvre, 75001 Paris FRANCE (Mme. J. Gautier)	X			
C12 Laboratoire d'Archeometrie, Universite de Rennes, 35042 Rennes Cedex FRANCE (Dr. M. Laugouët)	X			Methode D.A.T.E, archaeomagnetism of brick and tile
C13 Universite de Bordeaux I, Laboratoire de Physique, 351 Cours de la Liberation, 33405 Talence FRANCE (M. Schvoerer)	X		X	
C14 Research Establishment Risø, DK-4000 Roskilde DENMARK (Dr. V. Mejdahl)	X		X	Automated TL apparatus
C15 Max-Planck Institute fur Kernphysik, Postfach 103980 6900 Heidelberg WEST GERMANY (Dr. G.A.Wagner)	X		X	
C16 Rathgen-Forschungslabor Staatliche Museen, Preussischer Kulturbesitz, Potsdamer Str. 58, D-1000, Berlin 30 WEST GERMANY (Dr. C. Goedicke)	X		X	
C17 Physikalisches Institut, University of Bern, Sidlerstrasse 5, CH-3012 Bern, SWITZERLAND (Prof. N. Grögler)	X			
C18 Laboratorio di Termoluminescenza applicata all'archeologia Istituto di Scienze Fisiche, Gruppo Solidi, Via Celoria 16 - 20133 Milano ITALY (Prof. G. Spinolo and M. C. di Caprio)				
C19 Radiocarbon Dating Laboratory, University of Helsinki, X Snellmaninkatu 5, SF-00170 Helsinki FINLAND (Dr. H. Junger)		X		
C20 Madalińskiego 42/62, 02-540 Warszawa POLAND (Hanna Prószyńska)		X		Sediments
C21 Institut fur Analytische Chemie, der Universitat, Wahringerstr. 38, A-1090 Wien AUSTRIA (Prof. W. Kiesel and W. Körner)	X		X	
C22 Atominstitut, Schuttelstrasse 115, A-1020 Wien AUSTRIA (Dr. N. Vana)	X		X	Trace element analysis, radiation defects (color centers), EPR
C23 Institute for Applied Physics, Kossuth Lajos Univ. Debrecen 10 HUNGARY (Dr. J. Félzserfalvi)			X	
C24 Central Research Institute for Physics Hungary Academy of Sciences, P.O.B. 49 H-1525 Budapest HUNGARY (Dr. P.P. Szabó)			X	



<u>Lab Address</u>		<u>Archaeological Dating</u>	<u>Geological Application</u>	<u>Radiation Dosimetry</u>	<u>Other Interests/Comments</u>
<u>EUROPE</u>					
C25	Institute of Isotopes, 1525 Budapest POB 77 HUNGARY (Dr. L. Benkő)	X		X	Rad. protection/health physics, TL properties of arch. and geol. quartz
C26	Nuclear Physics Department, Univ. of Thessaloniki, Thessaloniki GREECE (Dr. S. Charalambous)	X			
<u>ASIA</u>					
D1	M. V. Lomosov State University, Moscow, U.S.S.R. (Drs. V. K. Vlasov, N. A. Karpov, and O. A. Kulikov)		X		Sediment TL and kinetics
D2	Institute of Geological Sciences, Academy of Sciences of the Ukrainian SSR, Kiev, Ukrainian SSR, U.S.S.R. (Drs. V. N. Shekopyas and G. V. Morozov)		X		
D3	Institute of Geology, 200101 Tallin, Estonia Pst. 7, Estonia, U.S.S.R. (Dr. Galina Hutt)		X	X	Sediments
D4	Physical Research Laboratory, Navrangpura, Ahmedabad 380 009, India (Dr. A. K. Singhvi)	X			Archaeological dating, sediments, meteorites
D5	Institute of Geology, Academia Sinica, Beijing, PEOPLE'S REPUBLIC OF CHINA (Dr. Pei Ching-Lsian)				Meteorites, minerals and strati- graphic correlation
D6	Institute of Archaeology, 9 Wang Fu Ta Chieh, Beijing, PEOPLE'S REPUBLIC OF CHINA (Dr. Li Hu Hou)	X			
D7	Shanghai Museum, Shanghai, PEOPLE'S REPUBLIC OF CHINA (Dr. W. Wang)	X			
D8	Radioisotope Unit, University of Hong Kong, Hong Kong (Dr. F. H. Kendall)	X			
D9	Bhabha Atomic Research Center, Bombay 400-085, INDIA (Drs. C. M. Sunta and K. S. V. Nambi)			X	
D10	Gukurova Universitesi, Temel Bilimler, Fizik Bolumu, Adana TURKEY (Dr. Y. Goksu-Ogelman)	X		X	
<u>AUSTRALIA /INDONESIA</u>					
E1	Physics Department, University of Adelaide, G.P.O. Box 498, Adelaide S. A. 5001, AUSTRALIA (Prof. J. R. Prescott)	X	X	X	
E2	Physics Department, University of New South Wales, Kensington 2033, AUSTRALIA (Prof. J. C. Kelly)	X			
E3	Physics Department, Faculty of Science, Australian National University, P. O. Box 4, Canberra, A.C.T. 2600, AUSTRALIA (Dr. J. A. Mortlock)	X	X	X	Pottery, bronzes, fireplaces, volcanics, sedimentary layers, environmental radiation
E4	Anthropology Department, University of Otago, P. O. Box 56, Dunedin, NEW ZEALAND (Dr. B. F. Leach)	X			Dating burnt stones
E5	New Zealand Geological Survey, P. O. Box 30368, Lower Hutt, NEW ZEALAND (Mr. T. Grant-Taylor)	X	X		
E6	Auckland University, Department of Physics, Private Bag, Auckland, NEW ZEALAND (Prof. T. Collins)				

THERMOLUMINESCENCE RESEARCH CENTERS



## A LETTER TO ANCIENT TL READERS

Many readers of ANCIENT TL will know already that Yeter Ögelman (nee Göksu) has been under "three months police supervision" - i.e. in prison - since May. She was arrested along with nearly 80 others for alleged active membership in an illegal Turkish Communist organisation five years ago. Yeter's husband, Hakki, has not been detained, but has resigned as Dean of the Faculty of Basic Sciences at Cukurova University. He is allowed to visit Yeter once a week and describes the conditions in the prison as generally "subhuman", although Yeter is apparently well and teaching English to her fellow inmates.

Yeter needs all the help that she can get and I've written to many of her former friends and colleagues asking for support. As I am no longer in the TL dating field, there may be people I don't know who would want to help Yeter through this unpleasant experience. ANCIENT TL seemed to be a effective means of contacting these people and to make Yeter's plight more widely known.

How can one help? By writing a letter of support in the form of a testimonial or character reference. Yeter would be among the first to write such a letter if one of us were in a similar situation, so it is the least that we can do for her. Collectively we may make a strong impression. In a recent letter, Hakki thanks all those who have already taken the trouble to write and adds: "... I am not sure that there is any single action that will give Yeter her freedom, but it is always good to mount pressure in terms of awareness within the scientific community".

What should one write? Basically, just a character reference and appeal for clemency, since the qualities that cause you to like Yeter are not likely to be prejudicial to the peace and security of Turkish society. Political comment should be avoided.

To whom should one write? Hakki and Yeter's defense counsel will select and marshal the appropriate evidence in what they think will be the most effective way of obtaining her release, so I suggest that you send your testimonial (with a prominent distribution list) direct to Hakki. A suggested distribution of copies is:

- Your local Turkish Embassy
- Your country's Embassy in Turkey
- Your Foreign Office, or equivalent government department.

Please let me know if you send a letter of support, so that I can gauge the response, and don't hesitate to spread the news to people who may know Yeter but don't read ANCIENT TL. So start writing and perhaps Yeter will soon be free to write to you. More news as I receive it.

Keith Stammers  
21 Edencroft, 64 Wheelleys Road, Edgbaston  
Birmingham B15 2LW England

Professor Hakke Ögelman  
Temel Bilimler Fakültesi, Cukurova Üniversitesi  
P.K. 171 ADANA Turkey

Yeter's prison address (censored mail):  
Doc. Dr. H.Y. Ögelman  
Kapalı Sivil Cezevi, Kadınlar Bulumu  
ADANA Turkey

## THIRD SPECIALIST SEMINAR ON THERMOLUMINESCENCE DATING

Helsingør (Elsinore), Denmark, 26-31 July 1982

## First Circular

As before, the objective will be to provide up-to-date coverage of all aspects of research on thermoluminescence applied to age determination in archaeology and geology, and to authenticity testing. Review papers and papers on current research within these topics are invited. Papers on routine applications can be accepted only if they are of special interest, either in respect of technique or significance of the results.

Abstracts. Prospective contributors are asked to send in the titles, authors' names and addresses, and a short abstract of their papers before 15 April 1982, at the same time stating whether the paper is intended for oral or for poster presentation. For oral papers, please underline the speaker's name and state (i) order of preference, (ii) optimum speaking time, (iii) minimum speaking time acceptable.

Seminar sessions and accommodation. The Seminar will be held at the conference centre "LO-Skolen", which is situated near the beach north of Helsingør, 15 minutes' walk from the city. Accommodations have been arranged for 80 participants at "LO-Skolen" in single rooms with toilet and shower. Arrival Sunday afternoon (25 July), first meal at 18.00 on Sunday evening, last meal at 12.00 on Saturday (31 July). The total cost for accommodation and meals will be 1600 D.Cr. (Danish Crowns). Rooms with twin-beds are available, but at no reduction in price.

Conference fee is estimated to be 700 D.Cr., and will include the cost of a copy of the proceedings.

Proceedings of the Seminar, including oral and poster papers, are expected to be published in the PACT Journal series (Council of Europe). All participants will receive a copy at a reduced price (about 150 D.Cr.) which is included in the conference fee.

Registration forms will be available in early January 1982 from The Seminar Secretary at the address given below. Forms will be sent automatically to all participants in the 1980 Seminar. The deadline for registration is 15 April 1982.

Vagn Mejdahl  
Danish Research Councils' Archaeometry Project  
Risø National Laboratory  
DK-4000 Roskilde, Denmark  
Phone: 02-37 12 12

## SOME RECENT BIBLIOGRAPHY

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