Jubilee Aitken - an eightieth birthday celebration

10 - 12 April 2002

It is given to very few of us to be the founder of a new branch of science.

Martin Aitken is one of those.

From a background in synchrotron physics at the Clarendon Laboratory, Oxford he moved to the infant Research Laboratory for Archaeology and the History of Art, known to most of us "RLAHA" or as "Keble Road". There he devoted his attention to a variety of physical methods of aiding the archaeologist. It was he who, with Christopher Hawkes, coined the word *Archaeometry* for the application of mathematics and physics to archaeological problems. He first devoted his attention to archaeomagnetism and its applications in this context, particularly proton magnetometer detection of buried remains. Since then, of course, Archaeometry has come, by extension, to embrace the application of all the sciences, and the original archaeology has been joined by Quaternary geology in the field of operations. Aitken is a physicist and it may therefore not be coincidental that a goodly proportion of the advances in methodology for luminescence dating have been made by physicists.

At the time, thermoluminescence was fairly well-known as a tool for studying minerals *per se*. Taking up an abandoned speculation that it should be possible to use mineral thermoluminescence to find the age of pottery, he showed that it was indeed possible to do so, although by his own account he wondered from time to time whether it was going to be possible after all. Nowadays, pottery features rather infrequently in the dating game, if you exclude the art market and authentication or the lids of toilet cisterns from Pripyat, as reported to the Conference.

The needed skills gradually diffused out from Oxford in the notebooks and heads of their many visitors and, by the mid seventies, thermoluminescent dating laboratories were beginning to spring up elsewhere in the UK, in continental Europe and even as far away as Australia and Canada. Visitors to those laboratories could not help but be struck by the fact that the way things are/were done could be identifiably traced to the Keble Road influence. Indeed, it was only in the 1990s that it was possible to find a luminescence dating laboratory in which such influence was no longer direct.

Two big advances were responsible for the expansion into geology:
1) the realisation by the Simon Fraser group and independently in the USSR, that the luminescence clock could be reset by exposure of mineral grains to sunlight and that this would allow sediments to be dated by TL and,
2) the corollary that, just as TL can be used to date samples for which the TL clock has been reset by heat, so photostimulation can be used to date samples for which the clock has been reset by light exposure. Resetting by heat is, of course still permitted.

All of these have a direct line of descent from Martin Aitken.

Now he has reached his eightieth birthday, not perhaps a Jubilee in the dictionary sense, but who cares?

It was therefore appropriate for his former students and colleagues to gather together in Clermont-Ferrand, to help celebrate it. For the idea and the execution, great credit and our thanks are due to Stephen Stokes and Didier Miallier.

Some forty five of us were there. There were a number of his earliest students, including his first D Phil student, Mike Tite, and others from the early years. There were present-day students of his students; and others who had taken the Golden Road to Keble Road from other less favoured climes and places. Unless my arithmetic is wrong, there was someone present who had worked at Keble Road for every year that Martin was there. Absent friends sent greetings by video and word processor. The writer of these notes can claim to have known Martin longer than anyone else (1950) and have travelled furtherest to get there. Many recalled the hospitality of Martin and Joan at Islip and expressed regrets that she was unable to be present.

The celebration took the form of a two-day conference with papers grouped roughly in eight themes. The general idea was to present the current

state of the art with invited and contributed papers and, in due time, to present Martin with a book containing them. Perhaps it could be regarded as the book that he himself might write were he updating his celebrated 1985 and 1998 books. It is hoped that it will be as useful to practitioners as those two were. The programme is reproduced below.

A "family tree" with the names of all his students and their students, in the form of a framed picture was presented. And individuals added their personal gifts.

There was also a good deal of food and wine.

Happy Birthday, Martin!

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Program

Thursday 11th April

Stephen Stokes & Didier Miallier Introduction & welcome
John Prescott A datable friendship?
Rainer Grün & Geoff Duller The place of luminescence dating in the context of absolute dating techniques
Steve McKeever & Richard Bailey The theoretical framework for luminescence dating
Ludwig Zöller Towards high temporal resolution of loess: Combination of physical numerical dating (luminescence and ^{14}C) and relative chronologies (magnetism and isotopes)
Richard Bailey, Barney Smith, Andrew Murray & Ann Wintle Luminescence properties of quartz relevant to dating applications
Ann Wintle, & Geoff Duller Luminescence properties of feldspar relevant for dating applications
Raphaël Visocekas Luminescence in France & its connection with Martin Aitken
Morteza Fattahi, Raphaël Visocekas & Didier Miallier Red luminescence - new approaches and potentials
Antoine Zink Far red luminescence of feldspar
John Prescott Something old & something new: Some new data on Thick Source Alpha Counting and some cosmic reflections
Ian Bailiff & Yeter Göksu Accident dosimetry
Lars Bøtter-Jensen, John Prescott & Nigel Spooner Instrumentation for the detection of luminescence emissions
Stephen Stokes A celebration of the career and contributions of Martin Aitken FRS

Friday April 12

Geoff Duller, Li ShengHua & Andrew Murray Single aliquot and single grain equivalent dose determination
Helen Bray, Geoff Duller, Richard Bailey & Stephen Stokes Data visualisation and error analysis in luminescence dating measurements
Joy Singarayer & Lars Bøtter-Jensen Linear modulation of optically-stimulated luminescence (LM-OSL)
Stephen Stokes and Simon Armitage Luminescence dating in desert sedimentary environments
Helen Roberts, Ann Wintle and Ludwig Zöller Luminescence dating of loess
Jakob Wallinga and Andreas Lang Beyond aeolian sediments: Applications of luminescence dating in fluvial and colluvial environments
Eddie Rhodes, Hélène Valladas and Norbert Mercier Luminescence dating frameworks for archaeological sciences in the Palaeolithic period
David Sanderson, Iona Anthony and Anne Sommerville The nature of the event: Luminescence dating in neolithic and later archaeology
Gunther Wagner Luminescence dating of sediment: An important tool in geoarchaeology
Andrew Murray, Roger Nathan and John Prescott Radioisotopes, dosimetry and dose rate determination
Dorothy Godfrey-Smith Plus ça change: A longitudinal study of developments in optical dating from the perspective of Rose Cottage Cave, South Africa
Hélène Valladas, Georges Valladas, Norbert Mercier, Chantal Tribolo TL dating of burnt stones
Marco Martini A database of TL dates on the Web

SFU age list

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A list of optical and thermoluminescence ages obtained at SFU up to the present can be found at http://www.sfu.ca/physics/research/workarea/huntley/ as a PDF file. If anyone would like a printed list, please ask me for one.

The following table is an outline of what is in the age list. O means optical dating, TL means conventional thermoluminescence dating, and TLS means thermoluminescence sediment dating. For most of the optical ages, 1.4 eV (IR) excitation of K-feldspars was used, and some ages have been corrected for anomalous fading; for a small number, 2.4 eV (green) excitation of quartz was used. Some samples for which no age was calculated are included in the age list, but not included in this table.

Region	type of sample	number of samples
Canada		
British Columbia	silt and sand, organic-rich sediment tsunami-laid sand or flood deposit glaciofluvial or glaciolacustrine silt pot sherd tephra	20 O, 3 TLS 10 O 13 O, 11 TLS 1 TL 4 TL
Alberta	aeolian sand delta sand, glaciolacustrine silt	10 O 2 O
Saskatchewan	aeolian sand	37 O
Manitoba	aeolian sand	11 O
Ontario	glacial sediments	3 TLS
Quebec	silt	1 O, 20 TLS
New Brunswick	dune sand	9 O, 1 TLS
Northwest Territory	dune sand, sand wedge	2 O
Yukon	tephra	1 TL
U.S.A.		
Alaska	tephra	1 TL, 1 TLS
Washington	peat, tsunami-laid deposit tephra	4 O 3 TL
Oregon	tsunami-laid lake deposits	5 O
California	sand and silt hearth	4 O 1 TL
Utah	tephra	1 TL
Massachusetts	beach dune	24 O
other		
South Australia	dune sands	16 O, 23 TLS
Siberia	sand, quartzite	3 O
Oceania	pot sherds	6 TL
ocean and gulf	sediment cores	19 TLS

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Student awards

The Vagn Mejdahl **poster award was shared by**

Gunter Erfut
Saxon Academy of Sciences
Freiberg, Germany

and

Sebastien Huot
Departement des Sciences de la Terre et de l'Atmosphère
Montréal, Canada

The **Martin Aitken** oral presentation award was shared by

Joy Singarayer
School of Geography and the Environment
Oxford, U.K.

and

Kristina Thomsen
Risø National Laboratory
Roskilde, Denmark

The prizes were presented by Dr Glenn Berger and the awards were sponsored by Risø National Laboratory, Denmark and by Daybreak Nuclear and Medical Systems Inc., U.S.A.