

## ASEG Awards at Sydney 2004\*

**Honorary Membership of the ASEG, for distinguished contributions to the profession of exploration geophysics**

### F. E. M. (Ted) Lilley

Dr Lilley's geophysical career has spanned more than 40 years, during which time he has made major contributions to Australian and international geophysics. Until his retirement from active research at the close of 2003, 'Ted', as he is affectionately called, has been a Senior Fellow at the Research School of Earth Sciences, Australian National University.

Ted has been an active and enthusiastic member of the society since its inception in 1970. He was a foundation member of the ACT Branch in 1979 and served as its President in 1980/81 and Vice-President in 1981/82. He served as Editor of the *Bulletin of the ASEG* between 1981 and 1983 and has been involved as an author, session chair or topic organiser in 14 of the society's 17 conferences.

Ted's geophysical career began in the early 1960s with the BMR. During two years in the regional aeromagnetic survey team he conducted experimental work to determine the feasibility of using proton-precession magnetometers in lighter aircraft than the existing DC3. This pioneering work laid the foundation for a method that has since become an essential component of Australian resource exploration and environmental studies. From this beginning, Ted's research has developed on a variety of fronts and has produced a number of



Ted Lilley (left) receives his Honourary Membership of the ASEG from President Howard Golden

important results for exploration geophysics, including:

- pioneering efforts to map the electrical conductivity structure of the Australian continent using magnetotellurics and magnetometer-array studies,
- compilation of a comprehensive model of the electrical conductivity structure of the Australian continent and Tasman Sea,
- ground-breaking analysis of the impact on aeromagnetic data of non-uniform electromagnetically induced fields, and,
- inventive observations of the aeromagnetic signatures of ocean currents and waves.

Ted has published over 100 papers during his career, including 17 papers and abstracts published in the *Bulletin of the ASEG* and *Exploration Geophysics* and six papers in *Geophysics*.

Intertwined with his research, Ted has been an excellent educator and mentor. He has supervised 10 PhD students, many of whom continue to make active contributions to geophysics. For 24 years he was guest lecturer in geophysics in the ANU Geology Department where his enthusiasm prompted a number of geology students to pursue careers in geophysics.

Ted has been a stalwart of Australian and international earth sciences for over four decades. He has been an inimitably warm and generous mentor and an exemplary ambassador for geophysics. He richly deserves Honorary Membership of our society.

### Ted Lilley's response

Thank you Howard. My thanks also to those who prepared the nomination for this award, which I am delighted to receive.

I should first ask if people of my age are allowed to have heroes? I think it important that we do, and let me say that many of my heroes are to be found on the Honorary Membership roll of the ASEG. It is a great distinction to now join them, and I thank you very much for this honour.

My initial introduction to geophysics occurred during summer jobs as a field assistant. Subsequently I benefited greatly from the training and friendships of my first employment with the Bureau of Mineral

\* The citations for the Service Medal and the Service Certificates will be published in the December 2004 issue of *Preview*.

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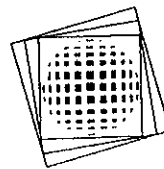
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Resources. I spent three years there, in between studies at the University of Sydney and the University of Western Ontario in Canada. Most recently, I have enjoyed the benefits of working with students and colleagues at the Australian National University, where I have spent 35 very happy and rewarding years, interspersed with visits to other places.

Canberra has a rich environment of earth scientists, and the ASEG both locally and nationally has been an extended family to me. Thus I particularly value this award of Honorary Membership. It is also a delight to have students and colleagues, past and present, gathered at this meeting.

I thank the members of my family for supporting my career, and especially Penny, who married into the BMR chapter of the world-wide geophysics clan in January 1963. Her career, in molecular biology, has been a treat to be part of.

In conclusion, the latter half of the 20th century, during which the ASEG came into existence and demonstrated such activity, has been a marvellous time to be doing geophysics. Australia is a quite remarkable happy hunting ground. I am sure the excitement, satisfaction and spectacular results will continue.

#### **Lindsay Ingall Memorial Award for the promotion of geophysics to the wider community**

#### **Peter Hatherly**

Dr Peter Hatherly receives the 2004 Lindsay Ingall Memorial Award, for his energetic and effective promotion of geophysics in the coal industry, and the development of improved techniques tailored to that industry. While his primary expertise and contribution is in seismic applications, he has also systematically encouraged the introduction of all appropriate methodologies, such that he is now looked upon as the 'face of geophysics' by geologists and engineers throughout the coal industry, both here and overseas.

For the past 11 years Peter has been with CSIRO Exploration and Mining, during which time he also led the Geophysics Group in the CRC for Mining Technology



*Peter Hatherly (right) receives his Lindsay Ingall Memorial Award from President Howard Golden*

and Equipment. He also spent 10 years with ACIRL and, before that, in the NSW Department of Mineral Resources.

In addition to his direct and/or leadership roles in introducing In Seam Seismic (ISS), the Radio Imaging method (RIM), crosshole seismic imaging, microseismic monitoring, his support for electromagnetic monitoring, and the list continues, he has made pioneering contributions to coal mining through the successful application of shallow high resolution 3D seismology to mining; through the deduction of quantitative geomechanical properties from core and borehole data and by the prediction of drill bit performance from seismic data.

He has made his results known through more than 100 publications and presentations in the geological, geophysical and mining forums. He has done all this through a combination of his energy, technical excellence and persuasive personality. By any standards his is a truly outstanding record for a scientist still in mid-career. Considering the importance of coal as one of Australia's major exports, Peter's work has made an important impact on the nation's economic life. From this it is clear why he is so highly regarded in the industry. He has brought credit to geophysics as a science as well as to himself.

Peter's role has already been recognised by an unusually large number of industry and CSIRO awards and by the Laric Hawkins Award of the ASEG. He has been a member of the ASEG for 29 years. He is now a very worthy recipient of the ASEG Lindsay Ingall Award.

#### **Peter Hatherly's response**

Thank you all. I am honoured to be receiving the Lindsay Ingall Memorial Award.

The coal industry in Australia is huge. It is our major export earner by a large margin and geophysics now plays an important role in coal mining. While the uptake of geophysical techniques within the coal industry continues to gather pace, there are still many outstanding geological issues at the coal face and in more general mine planning. Geophysicists with soft rock and geotechnical skills have much to offer. It has been a privilege for me to work within Australia's coal mining industry and if it is seen that I have assisted with the development of our profession in that industry, I am greatly honoured.

Over my years in coal mining, I have had the pleasure of working with many of you here. Thank you all for your contributions. I especially acknowledge my closest colleagues, Iain Mason, Binzhong Zhou, Xun Luo, Greg Poole, Milovan Urosevic Brian Evans and Keeva Vozoff. Derecke Palmer was an important mentor earlier in my career.

Finally, please allow me to comment more generally on the future. Both the coal and petroleum industries are now facing significant challenges concerning environmental management. Solutions to the problems of greenhouse gas and other emissions don't lie in shutting us down. Instead the disposal of waste needs to be managed through sequestration and the use of other geological repositories.

In addition, there are other solutions and environmental insights waiting to be taken up as geophysical challenges. An example is the generation of geothermal energy through accessing hot dry rocks. It is unfortunate that the debate within the media and put forward by green interests is so biased and uninformed. Hopefully this situation will improve sometime soon and our profession can start to take a lead in these absolutely important areas.

Thank you again for this honour.