

SECED NEWSLETTER

THE SOCIETY FOR
EARTHQUAKE AND
CIVIL ENGINEERING
DYNAMICS

July 1987 Vol. 1 No. 3.

ANOTHER MILESTONE



The 27 May 1987 marked an historic milestone for SECED - the inauguration of the series of prestigious Mallet-Milne Lectures.

Professor Ambraseys of Imperial College presented the first lecture at the Institution of Civil Engineers. The Chairman opened the meeting with a short introductory address before asking Professor Roy Severn from Bristol University to inaugurate the lecture series and to introduce the speaker.

Professor Ambraseys spoke on the subject of Engineering Seismology stressing the importance of the experience of field data in seismic engineering design and assessment. The lecture will be published in full in the International Journal for Earthquake Engineering and Structural Dynamics in early 1988.

The lecture was followed by a presentation to Professor

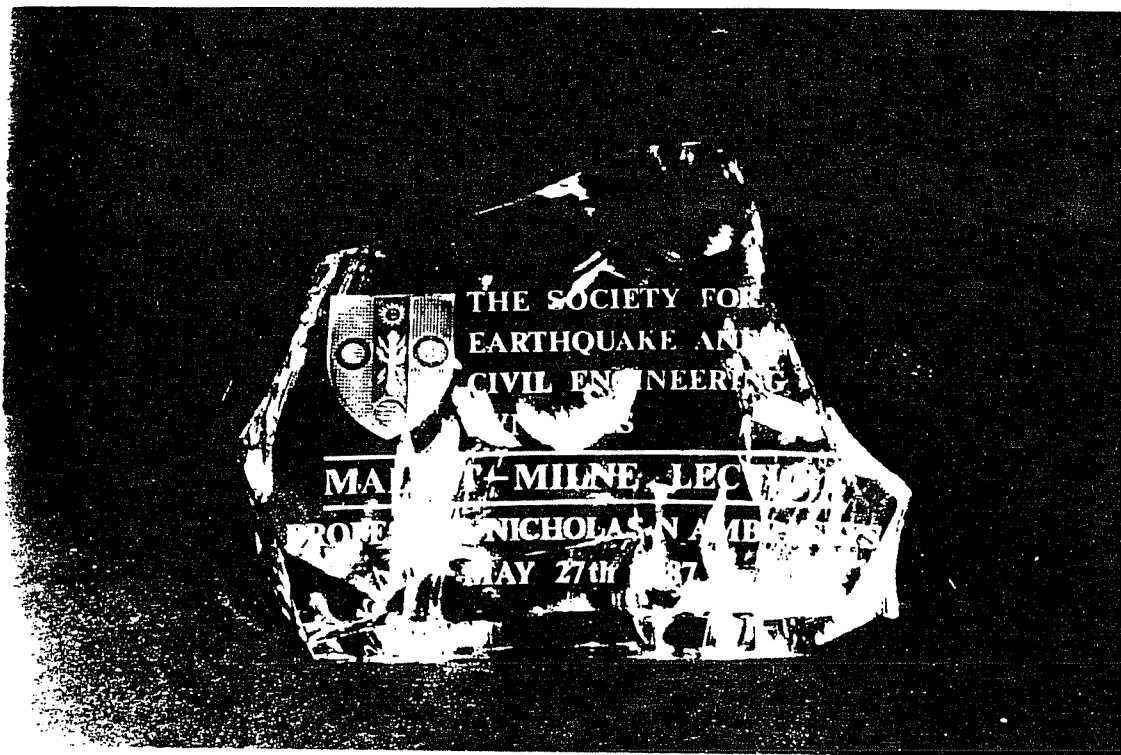
Ambraseys of a memento marking the occasion. An honorary life membership was also awarded to Professor Ambraseys in recognition of his valued contribution over the years to SECED.

The formal part of the meeting was followed by a cheese and wine reception. All in all, the occasion was an outstanding success.

The SECED Newsletter is published four times a year by the SOCIETY FOR EARTHQUAKE AND CIVIL ENGINEERING DYNAMICS and is available to all members of the society. Articles for inclusion should be sent to The Editor, SECED Newsletter, Mr. D.A. Howells at The Institution of Civil Engineers, Great George Street, London SW1P 3AA.

SECED would like to thank the commercial sponsors, the librarians at the Institution of Civil Engineers, the Mallet-Milne sub-committee, the publicity committee, and all the members of the society who have contributed to the success of this event.

The next Mallet-Milne lecture will be in May 1989.



GAS CLOUD EXPLOSIONS, SECED Meeting, 29th April 1987
by Dr. Steven Hall, MA, PLD, (Safety and Reliability Directorate, UKAEA)

Report by Dr. J.H. Mills (Allott & Lomax)

Dr. Hall is the Head of the Methods Development and Systems Analysis Group of the Safety and Reliability Directorate (SRD) of UKAEA. The Directorate was formed in the late 1950's in response to the Authority's need for advice and assessment of safety issues concerned with the nuclear power program. Dr. Hall explained that the methods developed for assessing safety of nuclear plant have wider applications, and gave as an example SRD's involvement in the Canvey Island study.

Dr. Hall introduced his lecture with dramatic slides of a propane gas explosion following a derailment, and the effect of gas cloud explosions on plant and structures at chemical plants, including slides of the damage at Flixborough. Dr. Hall explained SRD's interest in the subject of gas cloud explosions as relating to the effects of gas release and explosions on nuclear plant and containment structures. In such cases the source of the gas release may be offsite, either in the form of a nearby chemical plant, or adjacent transport facilities. The devastating potential of the latter was illustrated by reference to the road accident in Spain in 1978 which caused heavy casualties on an adjacent camp site.

Dr. Hall described the phenomena controlling the risk of gas explosions, stating that the world-wide risk of an accident with the potential of Flixborough was once every four weeks, with one to two accidents of this severity occurring every year. The damage caused by such explosions are due mainly to pressure effects, as usually gas

cloud explosions do not generate high temperature rises in structures. The consequences of turbulence and confinement on flame speed and hence pressures were explained, and Dr. Hall stated that detonation, once feared as the major hazard of gas cloud explosions, was now considered unlikely to occur. Major damage is caused by dynamic pressures of up to one bar and the following drag effects. The effects of atmospheric focusing of pressure on distant structures were also mentioned.

Dr. Hall completed his presentation with a short description of the assessment of equipment survivability using analytical and empirical techniques.

An interesting discussion ensued with contributions from Drs. Pitblado and Trbojevic of Technica Dynamics on modelling and analysis, Messrs. Thirlwall and Gilchrist of R.T. James and Partners on design pressures, Mr. Gilbertson of W.S. Atkins and Partners on venting, and questions by Mr. Beshara of the City University, which were answered in part by a contribution from Mr. Armer of the Building Research Establishment. Provocative remarks on standards in the nuclear and chemical industries made by Dr. Kunar of Impell were vigorously denied by Dr. Pitblado, at which point the meeting was closed and discussion continued to the bar.

The meeting was chaired by Dr. Kunar and total attendance was 17.

BRITISH EARTHQUAKE ENGINEERING RESEARCH

I was attending an Engineering Foundation Conference on Composite Construction held in New Hampshire, USA on 7 - 12 June 1987, where I was presenting a paper on codes for the design and construction of offshore composite connections. Since I had a set of slides of damage from recent earthquakes, and since there were several people who are actively involved in earthquake engineering research from the States, Japan and Iran, I proposed to the Conference Chairman to arrange for a special session during which I would make a presentation on damage due to medium size earthquakes. This session was announced and the presentation was very successful. Coincidentally, the same evening, an earthquake hit the mid-west affecting 5 States and causing some damage to structures, especially in Chicago. This unfortunate event made the seminar rather a topical issue and instigated a lot of discussion on earthquake engineering, during which the all-familiar question of "Why are we in Britain interested in earthquakes?" emerged. I was able to repeat a well-rehearsed answer, and took advantage of the situation to give SECED some publicity. I hope that in due course and through our collective efforts, a larger proportion of the engineering community will know more about British earthquake engineering.

A. Elnashai

PROGRAMME OF MEETINGS 1987/88

1987

Wednesday
September 23
at 5.30
ICE
Informal discussion: 'Dynamic wave and earthquake movement on offshore structures'.

Wednesday
October 21
at 5.30
Informal discussion: 'Application of spatial variability of strong ground motion' introduced by Professor Bruce Bolt

Wednesday
November 25
at 5.30
ICE
Informal discussion: 'Earthquake Field Missions' introduced by speakers from EEFIT

1988

Wednesday
January 20
at 5.30
ICE

Informal discussion on work undertaken by SERC