Editorial: Learning lessons from construction, past and present

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It gives me great pleasure to introduce the third issue of *Proceedings of the Institution of Civil Engineers, Forensic Engineering*, as the content covers a number of topics that are close to my heart. This issue of *Forensic Engineering* contains one briefing, three papers, two discussion contributions and a book review. The first two papers provide lessons learnt from construction projects undertaken in the past, while one describes a current engineering investigation and the other involves both past and present. I have no hesitation in commending them all to you.

This issue opens with a long overdue reprint of a classic paper that was presented to the Institution of Civil Engineers by William Fairbairn (Fairbairn, 1847). The paper details Fairbairn's serious concerns about the safety of large buildings when not designed and built by competent persons. He had investigated a number of building collapses and the paper describes the workmanlike forensic engineering he undertook to determine the cause of collapse of a mill that utilised 'suspended girder' construction. The briefing by Swailes (2011) precedes the reprint and helpfully explains the background to Fairbairn's paper and how events unfolded afterwards. Fairbairn's concerns proved to be correct and his paper bears witness to the value of a thorough understanding of the properties of construction materials. Keep an eye out for further classic paper reprints that will appear from time to time in future issues.

The next paper by Jarvis (2011) is a historical reflection on the dock construction disasters that occurred in the nineteenth century. I read this paper with particular interest as the author focuses mainly on incidents that occurred during construction of the port in my home city, Liverpool. Jarvis describes the special problems faced by dock engineers at the time and goes on to discuss the circumstances surrounding (and the lesson to be learnt from) two accidents involving the catastrophic failure of trench supports. The prevention of accidents on construction sites involving temporary works remains a prime concern for engineers today. This cautionary tale should be read by all engineers.

As a long-standing admirer of the valuable work undertaken by the UK Earthquake Engineering Field Investigation Team (Eefit), I was particularly pleased to see the paper in this issue

by Booth *et al.* (2011). Being present at Bam, Iran one day immediately before the devastating earthquake of 2003 (and being caught up in the ensuing regional emergency) gave me a shocking lesson in the worth of forensic engineering in earthquake zones. Since their establishment in 1982, Eefit have conducted field missions after earthquakes in 27 locations. To their great credit Eefit make the reports detailing the findings of their field missions freely available online. In the wake of the recent Japanese earthquake such a paper has never been more topical. It outlines Eefit's history and development, sets out its many achievements and presents details of a recent five-year government grant that will extend its effectiveness. There is no doubt the information gained from their field missions will continue to improve the structural safety of buildings and infrastructure in earthquake-prone areas.

In the final paper in this issue, Zmigrodzki (2011) describes investigations that followed structural failure of a roof under snow load. The author describes how by forensic engineering it was determined that the failure was largely caused by modifications that had been undertaken over time, owing to change of use demands. It is notable that the information gathered during the investigations was put to good use in the design of remedial strengthening works to bring the structure back into use. The paper serves as a reminder that any decisions to make modifications to a structure that could affect its performance should be properly informed. This brings to mind a rather unusual investigation I undertook to determine the significance of cracking to a suspended reinforced concrete floor slab in a leisure centre, where a large water-filled jacuzzi had been installed many years after the building was constructed, without first checking that the supporting floor could take the additional load.

This issue also includes two discussion pieces on the paper by Warren (2011) entitled 'Investigation of dam incidents and failures' that appeared in the inaugural issue of *Forensic Engineering* (Warren and Shrivastava, 2011; Warren *et al.*, 2011). There is much for members of the forensic engineering community and allied disciplines to gain by engaging in debate.

The editorial panel would like to cordially invite all our readers to contribute discussion pieces on the papers in this journal.

A new book of interest to those engaged in (or interested in) forensic engineering practice was published recently. Entitled *Structural Engineering Failures: Lessons for Design* (MacAlevy, 2010), it presents the failures and lessons drawn from 50 case studies of civil engineering structures throughout the world. A review of this book is provided at the back of this issue (Mottram, 2011).

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