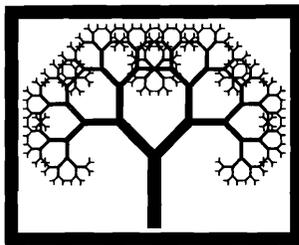


**INNOVATION  
IN  
CIVIL AND STRUCTURAL  
ENGINEERING**



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ENGINEERING**

*Edited by  
B.H.V. Topping and M.B. Leeming*



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## ❖PREFACE❖

This volume contains a selection of papers presented at The Mouchel Centenary Conference on Innovation in Civil and Structural Engineering, held in Cambridge, England, 19th-21st August 1997.

In 1897 Hennebique granted a licence to Louis Gustave Mouchel, a prominent business man, to introduce his system of ferro-concrete into the United Kingdom. Mouchel established a design office in Briton Ferry, South Wales but moved to London in 1899. Having been responsible for the first reinforced concrete structure in this country in 1897, Mouchel went on to develop many innovations in the use of ferro-concrete. Between 1897 and 1910 over 600 works were completed including: a grain silo at Waterford, Ireland (1903); a jetty near Naples, Italy (1905); and a naval dockyard in Tokyo, Japan (1909).

Louis Gustave Mouchel died in 1908 but the present company, Mouchel Consulting Ltd, has grown out of the partnership he established. In the intervening years Mouchel has been involved in many famous projects and industry 'firsts', including early reinforced concrete ships and Britain's first prestressed concrete bridge, at Boston, Lincolnshire. This conference celebrated the centenary of the Mouchel company under the appropriate banner of Innovation in Civil and Structural Engineering.

The papers in this volume include the following topics: historical perspectives on innovation; form of architectural and structural spaces; space structures; reinforced concrete structures; steel structures; timber structures; design of special structures; design of bridges and decks; analysis and design of arch bridges; design loadings; re-design, renovation and repair; membrane structures; and testing of prototype structures. Other papers from the conference are published in:

- Innovation in Composite Materials and Structures  
Civil-Comp Press, 1997, ISBN 0-948749-48-2
- Innovation in Engineering for Seismic Regions  
Civil-Comp Press, 1997, ISBN 0-948749-49-0
- Innovation in Civil and Construction Engineering  
Civil-Comp Press, 1997, ISBN 0-948749-51-2
- Innovation in Computer Methods for Civil and Structural Engineering  
Civil-Comp Press, 1997, ISBN 0-948749-52-0

We should like to thank all the authors for their contributions and in particular those who presented their papers in Cambridge. We must also thank the members of the Conference Editorial Board, listed on the following page, who helped in many ways before and during the conference. In 1995, Dr V. Peshkam of Mouchel Consulting Ltd proposed the celebration of the Mouchel Centenary by the holding of an international conference on civil and structural engineering. We are grateful to him for the impetus he gave us. The conference would not have been possible without the continued support and encouragement provided by Colin Coulson, Chairman of Mouchel Consulting Ltd. We are especially grateful for his help in seeing this project through to a conclusion.

Barry H.V. Topping and M.B. Leeming  
August 1997

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