

MAGAZINE OF CONCRETE RESEARCH

Volume 25, Number 85: December 1973

EDITORIAL ADVISORY BOARD

Chairman

A. D. Ross, BSc, PhD, FRSE, FICE

Emeritus Professor of Civil Engineering, University of London, King's College

Members

A. L. L. Baker, DSc(Eng), FICE, FStructE

Professor of Concrete Structures and Technology, University of London, Imperial College of Science and Technology

S. C. C. Bate, BSc(Eng), PhD, FICE, FStructE

Head of Structural Engineering Division, Building Research Station

A. R. Cusens, BSc(Eng), PhD, FICE, FStructE

Professor of Civil Engineering, University of Dundee

A. M. Neville, MC, TD, DSc(Eng), PhD, MSc, FICE, FStructE, FAmSocCE

Professor of Civil Engineering, University of Leeds

R. E. Rowe, MA, ScD, FICE, FStructE

Director of Research and Development, Cement and Concrete Association

EDITOR AND SECRETARY TO THE BOARD

Anthony E. Brooks, BA

Designed, printed and published four times a year by the Cement and Concrete Association

Editorial Office: Wexham Springs, Slough SL3 6PL Telephone: Fulmer 2727 Telex: 848352 Advicret Slough

Editorial comment

FROM TIME TO TIME people have been good enough to say kind things about the *Magazine of Concrete Research*. As the Editor is hardly under the illusion that this can be due to the promptness of its appearance, he hopes and believes it may be due to its contents when it does arrive. Yet, to some of those who were present, it seems 'only yesterday' that a meeting was called at Wexham Springs by Sir Francis Meynell to discuss whether there was any need for a journal devoted specifically to the reporting of research on concrete. The answer may be found on pages 232 to 247 of this issue.

That meeting actually took place on 23 April 1948 and one of those who was present – and who, indeed, remembers the preliminary discussions about calling such a meeting – was Professor A. L. L. Baker. He was subsequently invited by the Cement and Concrete Association to serve on the Editorial Advisory Board. After the first issue, Professor A. D. Ross, our present Chairman, joined the Board as well. These two members are now retiring from the Board and have thus served for twenty-five years. The Association is immensely grateful to them for the keen interest they have maintained in the *Magazine* during this time.

Arthur L. L. Baker spent 22 years in industry before taking up his Chair at Imperial College in 1945. After a period with the Reinforcing Steel Company in Johannesburg, he designed and constructed various concrete structures for Trinidad Leaseholds Limited. Work of his which is more widely known in this country includes the Heysham Jetty and his contribution to the Mulberry Harbour scheme of the Second World War. Thus, when he came to the academic world, he brought to it a keen appreciation of what mattered for the design of real structures. His principal aims have been to ensure that theoretical design approaches were always investigated thoroughly by repeated tests on reinforced structural members before

they could be accepted as satisfactory, and to disseminate the latest engineering knowledge in such a way that it was most applicable to practical design.

When Professor Baker arrived at Imperial College, the concrete laboratory was in the basement of the old City and Guilds building. In spite of the cramped conditions and lack of equipment, much valuable research was carried out there. The well-known 'plastic hinge' theory, as applied to reinforced concrete frames, was also conceived during this period. Thus the City and Guilds College became known internationally as the centre of research on concrete structures and attracted research students and visitors from all over the world. When it eventually became possible for Imperial College to expand, Professor Baker was able to put forward proposals for and obtain one of the best concrete laboratories in Europe, with the most modern and sophisticated testing equipment, and this enabled him to enlarge the scale and improve the environment of his structural research, increasing its relevance to industry.

An important means of disseminating the latest knowledge has been the post-graduate DIC course in Structures and Concrete Technology which, being unique in conception and scale, has also attracted students (more than 1000 in 28 years) from all parts of the world.

As one would expect from his interests, Professor Baker has consistently supported the Board's policy of publishing papers with a practical application, and has always advocated that theories should be well substantiated by test results. This is particularly important for a material such as concrete, since its non-linear behaviour under stress and the great influence of crack distribution in most structures upon their ultimate strength make analytical procedures very complex. There is, of course, great variety in the characteristics of concrete, and the behaviour of the material itself

has been the particular interest of our retiring Chairman.

Allan D. Ross in 1946 was appointed to the Chair of Civil Engineering and Headship of the Department in the University of London, King's College, and served in that capacity for twenty-five years. This gave him, amongst all the responsibilities of running a department, the opportunity to pursue certain research topics in concrete technology which had long interested him.

An early interest – referred to in *MCR* 1 and 3 – was the flow of heat in mass concrete, a topic which has increased in importance with modern structures and construction techniques. However, a sustained interest, which he had pursued for many years, was concerned with the effect of time and stress upon the movement of concrete. This work he developed in several directions until a general picture of the mechanisms of creep and shrinkage, and the parameters involved, began to emerge. In those earlier days, creep data were almost invariably presented in terms of the strain caused by a constant sustained stress. In actual structures this is an unlikely condition, since the stress generally is varying. Professor Ross formulated and verified the relationships between the creep under constant and under varying stress and outlined methods for predicting one from the other, a piece of research which was to prove of considerable significance.

In 1960 he began to examine the effects of modest temperatures, mostly below 100°C, upon the strain behaviour of concrete and the resulting effects in structures. Some interesting and, indeed, almost dramatic results stemmed from this work and, in the event, it proved to be of major importance for it anticipated

the use of concrete pressure vessels for nuclear reactors, vessels which are designed to be subjected to thermal loading.

Many reports by Professor Ross on a wide variety of topics in concrete technology can be found in the technical literature. In part because his laboratory was not well suited to the establishment of a mass of experimental data – such as would be helpful in drafting a code – and in part from inclination, he always greatly preferred exploratory research in which much preliminary thought was followed by some pilot experiments largely in verification. This type of research can throw up significant new ideas and it was the approach which always excited and interested him.

Over the years Professor Ross built up a research school of the highest quality at King's College which gained first a national and then an international reputation. The fact that many of the able members of his team continue to develop and expand the work which he started at King's College is his greatest pride and pleasure.

It gives us great pleasure to welcome on to the Board, to fill the two vacancies, Mr R. H. Elvery, Reader in Civil Engineering, University College, London, who was in fact the first Editor of *MCR*, and who is now well known for his work on non-destructive testing, and Mr C. Hobbs, Director of John Laing Research and Development Ltd, whose many interests, as leader of one of the most distinguished industrial research teams in the country, include the development of lightweight concrete. We hope that they will both help us to keep our sights on research that is relevant and useful to the industry.