HERON is jointly edited by:
STEVIN-LABORATORY of the
faculty of Civil Engineering,
Delft University of Technology,
Delft, The Netherlands
and
TNO-INSTITUTE
FOR BUILDING MATERIALS
AND STRUCTURES.
Rijswijk (ZH), The Netherlands
HERON contains contributions
based mainly on research work
performed in these laboratories
on strength of materials, structures
and materials science.

ISSN 0046-7316

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HERON vol. 32
1987
no. 4

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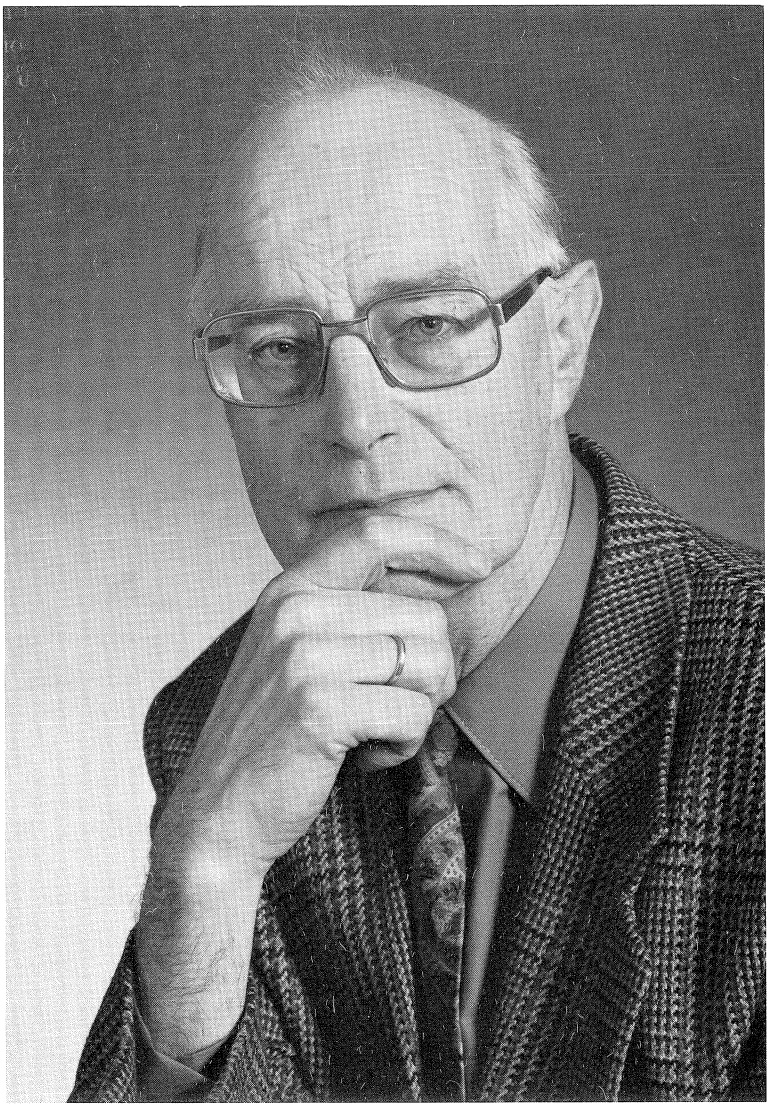
Publication in HERON since 1970



Editorial

At the end of 1987 our esteemed friend Ir. F. K. Ligtenberg retired from TNO, the Netherlands' Organisation for Applied Scientific Research. In this organisation he has been director of IBBC, the TNO Institute for Building Materials and Structures from 1960 till 1983. After that date he has been adviser of the Board of TNO as well as of the Institute. Moreover, from 1970 till 1979 he was editor in chief of this periodical.
The presents issue of HERON is devoted to papers in honour of Ligtenberg on the occasion of his retirement. The papers, written mainly by collaborators of the Institute, are all related with the theme of safety and reliability. This subject has had his interest since long; he exerted great influence on research and design procedures in our country, and played a prominent role in the Joint Committee on Structural Safety, set up by international research bodies and engineering societies.
During the first part of his career Ligtenberg focussed his attention on the subject of experimental stress analysis. In 1947, while still a student, he became assistant to Prof. Ir. C. G. J. Vreedenburgh, the well-known teacher in those days, and was entrusted with the introduction of this subject in the faculty of Civil Engineering of the Delft University of Technology. An installation for photo-elastic stress analysis was built to his design and under his direction. In 1950 Ligtenberg received his diploma of civil engineer with honours for a thesis on the investigation of three-dimensional states of stress.
Soon his ability to open new venues, create new possibilities for stress analysis became apparent. A well known instance is his development of the moiré method to study the bending of plates. This evolved as a very practical and efficient method for the determination of the bending and twisting moments in slab floors. Publications in the 50's made his work known both in the international circle of experimental stress analysts (where it is now customary to speak of the Ligtenberg moiré method), and among practising civil engineers in the Netherlands. We look back now on the period of post-war reconstruction in our country, when many bridges, viaducts and tunnels were to be built. Many of the civil engineers who were engaged in this work came to Ligtenberg for advice and the support for their design work, resulting from photo-elastic or moiré investigations by Ligtenberg and his co-workers.
These investigations were carried out on elastic models, in accordance with the linear-elastic theories of design that prevailed in the absence of other theories. But soon his interest widened and the real behaviour of materials and structures became his new research topic. His creative playful mind surprised us time and again, e.g. with "caricature models" of portal frames, illustrating progressive collapse by means of gross amplification of non-linear phenomena. He showed himself to be a born experimenter, and he was able to help others along this way, suggesting improvements of the effi-

ciency of measuring techniques. His advice was also sought for statistical aspects of the design of experiments, a subject of which he had made special study.
In 1958 Ligtenberg left the university and came to TNO, starting on the career that we have outlined in the first paragraph and will now detail a little further. Ligtenberg became very active in the field of welded connections for steel structures, which led to many contacts both at the national and at the international (IIW) level. A test series was set up as an international effort, of which design and organisation were in his hands. The results have led to internationally accepted design rules for welded connections. His field of interest continued to widen. In this period he wrote papers on subjects such as stability problems in limit state analysis, effect of wind on structures, vibration analysis of reinforced and prestressed concrete beams. His floating block analogy for the behaviour of columns in the elasto-plastic region contributed much to the development of new design rules for columns, by virtue of the illustrative qualities such an analogy has.
Gradually (and finally) he entered the field of building in its widest sense. He delivered many lectures of a general nature and wrote articles on subjects such as technological developments and building research. He was very much engaged in studies in the built environment, and strongly advocated the renovation and rehabilitation of buildings. Here also he pointed out improvements to the ways in which these things are done, endeavouring to renew the spirit of the profession. His rich imagination also led to reflections on living and working 50 years into the future, and on the hidden possibilities of the sea. These articles evoked great interest.
First as a member and later on as chairman of the planning commission of TNO, a commission in charge of research in the entire building field, he was able to exercise beneficial influence on the choice of subjects for future investigations.
During all of his career he acted frequently as consultant for important building and civil engineering structures; his advice was also sought in cases of major structural failures. He played a prominent part in the preparation of building regulations and technical specifications, giving directions for (and participating in) the work. He served in numerous committees set up by the Government in order to promote research for the construction industry. The Royal Institution of Engineers awarded him the gold medal for excellence in research and he was appointed Officer in the Order of Orange Nassau.
This short description of Ligtenberg's career may make clear to a wide readership, how much importance his work has had for the building and civil engineering worlds during the past 40 years. We sincerely hope the profession may continue to benefit from his original thinking, possibly by way of inspiring comments on current affairs.

A. L. Bouma
past editor in chief

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