

Hängedacher (Suspended roofs)

Edited by I. M. Rabinovic

Drawn-on, soft cover, $9\frac{3}{4} \times 6\frac{1}{2}$ in. pp. 212. Published by Bauverlag GmbH, Wiesbaden and Berlin. 1965. DM 22.

The last fifteen years have witnessed the construction of some remarkable structures embodying the 'catenary' principle and the tensioned membrane and, with the name of Frei Otto steadily gaining prominence in architectural and structural engineering circles, the publication of a book on suspended roofs will hardly arouse surprise.

This book contains the texts—in a German translation—of a number of papers on theoretical and also some practical aspects of the subject by Russian engineers. Most of them were presented at a symposium on the analysis, design and construction of suspended roofs (cable systems and suspended shells) which was held in Moscow in 1961. It would appear that these studies were in part inspired by Frei Otto's book *Das hangende Dach* ("The suspended roof"), which appeared in 1954.

The kinematic non-linearity of such structures, together with their three-dimensional character and the many constructional details that have to be taken into account, are factors which make their 'exact' analysis relatively complex, so that, for practical design purposes, it is essential to introduce appropriate approximations and simplifications.

The book contains the texts of the following papers.

- (1) Present position and anticipated future development of suspended roofs; (2) Analysis of flexurally non-rigid cables for arbitrary vertical loading; (3) Statics and dynamics of a hanging elastic cable; (4) Momentarily rigid systems, their properties and the principles of their analysis; (5) Some problems concerning the analysis of suspended roofs; (6) Principles of the analysis of suspended roofs with supporting system of flexurally non-rigid cables; (7) The analysis of a circular suspended roof with radially disposed tensioning cables; (8) Some problems of the analysis of suspended roofs with orthogonal spatial cable networks; (9) A practical method for the analysis of orthogonal prestressed cable networks; (10) Analysis of circular non-prestressed suspended roofs, taking account of the deformation of the supporting ring; (11) The dynamics of flexurally non-rigid roofs with large sag; (12) Moment-free supporting rings for roof cable systems; (13) A practical method for the investigation of spatial elements of suspended structures; (14) Experience gained in a model test and in the testing of the suspended roof of the music pavilion at Reval; (15) Experimental investigation of prestressed suspended shells circular on plan.

There is little doubt that this book deserves the serious attention of all designers concerned with the design of suspended roofs and of tensile membrane structures generally.

C.V.A.

Stahlbeton: Bauwerke—Bautechnik

(Reinforced concrete: Structures—Construction Technology)

by Walther Drechsel and Ernst Neufert

Folding board cover, $10\frac{3}{4} \times 9\frac{3}{4}$ in. pp. 115. Published for the Deutscher Beton-Verein and Fachverband Zement by Bauverlag GmbH, Wiesbaden-Berlin. 1967. DM 24.40.

This book comprises two parts, written by Drechsel and Neufert respectively.

The first part, in which the subject is approached more particularly from the engineering point of view, reviews the post-war record and achievements of the German construction industry and deals briefly with developments in technology and applied scientific research.

Improvements in methods of making concrete and formwork, as applied to a wide range of constructional work in civil and structural engineering, are then described with reference to numerous illustrations of actual reinforced concrete and prestressed concrete structures: bridges, viaducts, silos, buildings and so on. New developments in construction techniques are indicated: shed-type industrial buildings assembled from precast components, shells and allied structures, prestressed concrete in industrial building construction, bridges (of precast as well as in situ construction), quay walls and bank protection works for waterways, dry docks, pile foundations, sheet piling, tunnels, barrages and so on.

The second part of the book is concerned with the aesthetic and architectural design possibilities offered by concrete as a medium of creative construction. It reviews some significant concrete buildings erected during the past sixty years and deals more particularly with post-war architecture in Germany: industrial buildings, utilitarian structures, halls and similar public buildings (including structures with shell roofs and suspended roofs), multi-storey residential and administrative buildings etc. Purely functional structures such as cooling towers, silos, chimneys, television towers and the like are also considered. Modern prefabricated construction with precast concrete for residential, industrial and educational buildings also receives attention, the possibilities presented by the use of fair-faced concrete are examined, and finally the aesthetic character of bridges (especially those associated with the German motorways) is discussed.

The book is of considerable interest in that it provides an expertly and judiciously compiled survey of the multiple aspects and potentialities of modern reinforced concrete and prestressed concrete construction, both from the engineer's and from the architect's point of view. The numerous excellent photographs, which form an integral part of the book and are an essential complement to the descriptions in the text, are an especially attractive feature.

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