a network of cables or similar members performing the actual load-bearing function.

The author describes the evolution of the modern catenary roof from the first major structure to be built in accordance with this principle: a steel roof at Albany, U.S.A., in 1932. He goes on to discuss other well-known structures, such as Lafaille's exhibition building at Zagreb (1937) and, in particular, the great arena at Raleigh, U.S.A., the design of which was based on an original scheme produced by Nowicki in 1950. Further outstanding examples of this method of construction are the Swiss Pavilion at the Berlin Industrial Exhibition (1952) and the Schwarzwald Hall at Karlsruhe, Germany (1954).

The behaviour of suspended membranes and network systems is explained in simple language. Numerous highly informative diagrams, sketches and photographs of models help the reader to gain a clear understanding of the principles involved. A good deal of information is given on structural details and methods applied in actual buildings. Possible future developments, some of them daring and fantastic, are indicated.

Although the theory of catenary roofs and similar structures is explained and design methods are discussed, this book lays no claim to giving anything like a full treatment of the subject from the structural engineering point of view. Its chief merit lies in its being a summary of progress achieved and in its clear and attractive presentation of principles and possibilities. Its value is enhanced by the many illustrations it contains, including a number of photographs of completed structures.

Der Einfluss des Kriechens und Schwindens in Spannbeton-Konstruktionen

(The influence of creep and shrinkage in prestressed concrete structures)

by Dr.-Ing. W. Säger

Published by Werner-Verlag GMBH, Düsseldorf. 1st edition. 1955. Price DM 15.00. pp. 175.

This book presents a rigorous and fairly exhaustive treatment of the mathematical theory of creep and shrinkage as applied to prestressed concrete structures. The author bases himself on Professor Dischinger's well-known mathematical formulation of the phenomena in question.

The seven chapters of this volume deal with basic theory, bonded statically determinate systems, unbonded statically determinate systems, systems in which continuity is subsequently established, unbonded statically indeterminate systems, bonded statically indeterminate systems, deformation of prestressed concrete structures due to creep and shrinkage. For reasons not stated, the author confines himself to post-tensioned systems. His object in dealing with unbonded prestressed concrete in some detail, despite its limited practical significance, is to present the treatment of his subject in a generalized form, proceeding from the analysis of relatively simple problems to that of more complex ones.

The application of the formulae derived is illustrated by means of worked examples. Towards the end of the book these formulae become long and involved, so that the solution and numerical evaluation of the relevant equations tends to be a rather formidable task, in spite of the introduction of certain approximations.

This book is certainly not everyone's meat. Even a cursory inspection of its pages shows that it can hardly have been written with the requirements of the average practising designer in mind. Its presentation of the subject will appeal only to readers with a pronounced mathematical bias. The more practical-minded engineer, while fully realizing the importance of creep and shrinkage in their effect upon prestressed concrete structures, will tend to look askance at this " exact " mathematical analysis of phenomena which are inherently inexact in the sense that it is not possible accurately to describe the behaviour of an essentially variable and unpredictable material like concrete in terms of a few rigidly defined physical constants. For his practical needs he will almost certainly turn to simpler and probably quite adequate methods of computation. On the other hand, this logically developed and well set-out treatise may commend itself to the research engineer engaged in the investigation of special problems in structural theory. Moreover, in fairness to the author, it should be mentioned that in his introductory section he points out that his book is meant only for " those who are desirous of being introduced to this sphere of problems ".