

bers, W. Dilger (who, before his present activity as Associate Professor at Calgary University, Canada, worked with Professor Leonhardt in Germany) cooperated with the author. These chapters, which are of particular importance to the structural engineer, cover the analysis of the effects of shrinkage and creep in uncracked and cracked reinforced and prestressed concrete members, including short- and long-term deformations. With regard to prestressed concrete, this is amplified by various conditions which may occur, such as the effect of multi-stage prestressing. One of the chapters is devoted to creep in arches, continuous beams, composite members and cylindrical shells. With regard to code requirements in various countries, reference is made to Chapter 13, "Prediction of creep", previously mentioned which also includes the CEP-FIP Recommendations.

To sum up, it should be stated that this excellent

book which is illustrated with numerous clearly drawn diagrams, will be of very great importance not only to the research worker and concrete specialist for whom it is essential, but also to the structural engineer dealing with concrete, because it will enable him to recognize the various influences and to realize that it is vital to take them into consideration. It should, however, be appreciated that it is very difficult to predict the effect of creep at the design stage when particulars about the aggregates to be used, the mix, curing, weather and temperature conditions at casting and other variables are not fully known, but safe assumptions have to be made. Over-simplifications are just as bad as complicated, detailed computations, based on mere assumptions, which need not necessarily be correct. For the designer to have a sound knowledge of these problems is therefore vital, but unhappily this is often not appreciated.

P. W. ABELES

Adjuvants et traitements des mortiers et bétons

(Admixtures and treatments for mortars and concretes)

M. Vénaut

Published by the author, Chef du Service Technologie, Centre d'Etudes et de Recherches de l'Industrie des Liants Hydrauliques, 23 rue de Cronstadt, 75 Paris 16e. 1971. 246 × 162 mm. pp. 430. Price : 80F + 5F postage.

Dr Vénaut has set out to fill a gap in concrete technology: it is hard to find a good book on concrete admixtures and surface treatments. The effort has been worth while. The author is obviously well versed in the subject-matter and has managed to collect information from many sources, sift it carefully and present the result in a very readable form.

A basic problem in dealing with admixtures is to find the right expressions to convey the meaning without involving chemical terms which are largely incomprehensible to the average engineer. In this respect Dr Vénaut has succeeded very well, although he does not shirk the use of chemical formulae and names in the proper places. Some moderately detailed knowledge of chemistry on the part of the reader is implied.

Another problem is classifying admixtures which have more than one function. This is all explained satisfactorily in the introductory section of the book and will clarify the situation for many puzzled users of admixtures.

The first main part of the work is largely devoted to methods of test for admixtures. The coverage here is comprehensive—perhaps too comprehensive. In the author's attempt to mention all the procedures, the details of each are inclined to be sketchy. Although it is clearly stated that standard procedures have been omitted, more guidance here would have been an asset. For determining the chloride content of a product, for example, we are told that it can be carried out poten-

tiometrically, gravimetrically or volumetrically, but very little else. It would have been appropriate to have been given full details of a procedure for measuring this and other active ingredients commonly found in admixtures, as well as to describe the methods for measuring other parameters of the concrete such as bond strength, shrinkage and so on, rather than whet the reader's appetite with an outline of the procedures that are available. The experience gained in using the methods can be of great interest to the engineer.

Having tested the products we are not always told what to do with the results. What limits should be applied in composition for consignments of a proprietary plasticizer? This is the sort of question which presents difficulties when a national Standard on this topic is being drawn up.

The chapter on concrete admixtures is the core of the book. It covers the normal water-reducing and air-entraining admixtures as well as accelerators, retarders and the more specialized products such as fungicides, pigments and so on. Lignosulphonate compounds, the almost universal base for water-reducing agents, are given separate detailed attention. This chapter includes data on fly-ash, pozzolanas and other powders which can be used to modify the properties of concrete at high addition rates, and ends with a few notes on additives used by the cement manufacturer.

Dr Vénaut then turns to release agents and paints and varnishes for concrete. In this chapter, too, there

are signs that, in the attempt to make the coverage as comprehensive as possible, the finer detail has been omitted. In some places there is only room to list materials with a few brief notes on the important aspects. Determined to extend the scope to the limit, the author turns to efflorescence and stain removal, curing compounds, resin repairs and, in Part 4, the manufacture and placing of concrete and mortar, discussing equipment and apparatus such as admixture dispensers.

Finally, there is a comprehensive list of several hundred products which are available on the French market with their suppliers listed alphabetically. This

list is impressive in its detail and so your reviewer was particularly disappointed to find that the French admixture he knows best was not included. The main active ingredients of the proprietary products are not given.

As a thoughtful gesture, a long glossary of terms has been appended in French, English, German and Spanish.

Yes, a good book, but perhaps the author tried to cover too much ground at one time. Although aimed specifically at the construction industry in France, it is well worth studying in other countries.

R. KEEN

Shorter notices

Les résines de synthèse dans la construction (Synthetic resins in building construction)

RILEM Symposium, Paris, 4–6 September 1967
Paris, Editions Eyrolles, 1970. 160 × 250 mm.

Vol. 1. pp. xxxv, 475. Price: 132 F + 5 F postage.
Vol. 2. pp. xiv, 591. Price: 189 F + 5·30 F postage.

These two volumes contain seventy-seven papers presented on the occasion of the Paris symposium. There is also a general report and a very small amount of discussion on each of the main topics.

Vol. 1 deals with Topics 1a and 1b. Topic 1a is officially called "Concretes and mortars, improvement by adding resins". The general reporter, however, noting that most of the papers draw attention to restrictions, would have preferred to call it "Modifying the properties of mortars and concretes by adding resins". Topic 1b is "Concretes and mortars without cement". Vol. 2 covers Topic 2, "Structures, jointing, reinforcing", and Topic 3, "The role of resins in the protection and repair of structures".

The general reporters make a good job of classifying the diverse material they have to handle. Most of the papers are well supported with data, but inevitably the basis of comparison varies from country to country and from material to material.

Each paper is printed either in English or in French. (These are the two official languages of RILEM but are not necessarily the original language—the title of a paper from Germany about strengthening beams refers to "the sanitation of prefabricated bridge members"). On Topics 1a, 2 and 3, there are more than twice as many papers in English as in French; on Topic 1b, the position is reversed. The summary of each paper and the general report of each session are printed in both languages.

A.E.B.

Concrete for high temperatures

by A. Petzold and M. Rohrs

Translated by A. B. Philips and F. H. Turner

London, Maclaren and Sons, 1970. pp. 235. 241 × 174 mm.
Price: £6·00.

The authors of this book, originally published as *Beton für hohe Temperaturen* by VEB Verlag für Bauwesen, Berlin, have been prompted by the apparent lack of available information on refractory concrete and by the growing importance of this material in the construction of industrialized furnaces, to produce a comprehensive account of the present stage of development in the field of concretes for use at high temperatures. The greater part of the book is devoted to heat-resistant and fire-resistant concretes made from cements, these being the most common materials in this field, but mention is also made of concretes derived from special cements or waterglass with new binding agents, such as magnesia binders, phosphoric acid or phosphate. The problems of mix design, concrete mixing and placing are discussed very thoroughly with examples related to cement-bound concretes; similar problems regarding the newer types of concrete are suggested as subjects for future development.

The importance of 'high-temperature concretes' is demonstrated by the wide range of uses discussed in Chapter 6. Typical examples are given together with the results of experience gained; these can be seen to vary in different industrialized countries. The book also devotes a chapter to the economic aspects of refractory concretes and outlines their advantages in comparison with the conventional use of fired bricks.

The text, which is clearly written and easy to read, is illustrated with some 70 Figures.

P.V.M.