DAIRY RECORDS

Milk and Butterfat Recording

A World Survey. By E. D. Ashton. (Technical Communication No. 3 of the Commonwealth Bureau of Dairy Science and Technology.) Pp. x+197. (Farnham Royal: Commonwealth Agricultural Bureaux, 1956.) 30*s*.

THE only previous publication dealing comprehensively with this subject was that of the International Institute of Agriculture in 1935. Since then considerable progress has been made in methods of milk and butterfat recording and in the use made of such records, and the number of officially recorded cows has increased from 4½ million to the present figure of approximately 8 million.

This survey is a welcome and highly informative contribution to agricultural literature. The history and development of milk recording in some thirty countries is presented in a concise and comprehensible form, as are the financial and administrative problems inherent in the different systems of milk recording operating under the varying conditions which prevail in these countries.

The book appears to fall naturally into two parts: a general survey of the present state of milk and butterfat recording and a series of detailed accounts of the milk-recording movements in specific countries.

Chapters in the first part trace the development of milk recording from the small beginnings of private and breed society records to the start of official milk recording in Denmark in 1895 and on to the present position wherein more than thirty countries have official milk recording schemes and between one-quarter and one half of the dairy cows in the main dairying areas of the world are officially recorded. Organization of milk recording and methods of financing these movements are discussed very fully as are the practical aspects of milk recording such as identification of cows, methods of sampling, butterfat testing and milk recording personnel. An extremely interesting chapter is devoted to the use of milk recording on and off the farm, in feeding and breeding policies, and another presents the interest of international organizations in milk recording as a means of increasing economic production of milk to help meet the nutritional needs for animal protein in many parts of the world. In the final chapter of Part 1, the author links the future progress of milk and butterfat recording with other services of livestock improvement. An addendum to the first part comprises an excellent review of the literature on methods of milk recording.

The second part of this survey is devoted to milk-recording movements in different countries. The countries covered include the older agricultural countries of Europe, the newer agricultural countries such as Australia, Canada, New Zealand, Southern Rhodesia, the Union of South Africa and the United States of America and tropical and sub-tropical countries such as India, Israel, Jamaica, Japan, Pakistan, Kenya, Tanganyika, Uganda and Nigeria. Concise information is given concerning the national dairy herd, the development of milk recording, its organization and practice in these countries. Each country has its own particular problems and a system of milk recording which proves satisfactory in one is not always the most suitable in another.

Each section contains a summary and a list of references and there are forty-three illustrations. As might be expected in a book of this nature, there are a number of figures and tables. These are clear and well set out and are most informative. In addition, there are a number of useful appendixes.

The author is to be congratulated on assembling such a fascinating account of the world's dairy herds. The publication is of real value to all those seeking information about methods and achievements of milk recording, whether their interests lie in well-developed agricultural countries or in countries where such developments are growing or are yet to come.

HELEN R. CHAPMAN

SUSPENSION BRIDGES

The Theory of Suspension Bridges

By Sir Alfred Pugsley. Pp. vii+136. (London: Edward Arnold (Publishers), Ltd., 1957.) 42*s*. net.

THE several theories of suspension bridges are presented concisely and clearly in this book together with the principles of the study of the vibration of this type of structure.

After an interesting historical introduction to the subject, there are two chapters on theories of the simple suspended cable, including the analysis of stresses and deflexions for various conditions of loading. The well-known approximate theory due to Rankine is the first of the theories of suspension bridges dealt with in the book. Rankine assumed that the cable is parabolic and inextensible, that the deck girders are rigid and that live loading is distributed uniformly to the cable by the girders. This is followed by an account of the elastic theory due initially to Navier and developed more recently by Steinman, which is an improvement upon Rankine's theory only in respect of the allowance for the elasticity of the cable and girder in the determination of the intensity of uniformly distributed loading on the cable. Finally, the more accurate deflexion theory derived by Melan on the basis of the differential equations of the cable and stiffening girder and its approximation—the linearized deflexion theory due to Godard—are considered. The deflexion theory as developed in the United States by Moisseiff and others has proved extremely valuable for predicting the behaviour of modern long-span suspension bridges. In his treatment of the linearized deflexion theory, the author includes the use of trigonometrical series as well as his own contribution, the flexibility coefficient approach. The use of the former for solving the equations of the general deflexion theory in the manner proposed by Timoshenko and Steuerman is described in a separate chapter.

There is a useful chapter summarizing approximate methods of analysis for preliminary design, which is followed by two chapters on the vibration aspect. The collapse of Moisseiff's Tacoma Narrows bridge in 1940, due to aerodynamically induced vibrations, emphasized the importance of this phenomenon to the designers of long-span suspension bridges. Thus, Chapter 11 deals with the prediction of natural frequencies and modes of vibration in flexure and torsion, while the final chapter gives an abbreviated treatment of the problem of vibration of suspension bridges due to lateral winds, including the use of scale-model tests.

The book is unique among British works on theory of structures, and its conciseness and lucidity are admirable. It is clearly set-out and contains references to original papers and a select bibliography.

T. M. CHARLTON