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*Frontispiece.* Pure bred Dorset ewes. Lambs Dorset-Wensleydale, first cross.  
(Reproduced by the courtesy of Sir Frederick Aykroyd, Bart., J.P.)

E.M.B. 21.



# WOOL

## A STUDY OF THE FIBRE

By

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## PREFACE.

The economic importance of wool to the British Empire is strikingly shown in the trade returns of the United Kingdom, Australia, New Zealand and South Africa. In 1928 wool accounted for 19 per cent. of the United Kingdom's imports of raw material, 48 per cent. of Australia's exports, 30 per cent. of New Zealand's and 56 per cent. of South Africa's exports of merchandise (excluding gold and precious stones). Nearly one-half of the United Kingdom's own production, amounting to about 100 million lbs. annually, is exported. The Empire as a whole exports two-thirds (1,400 million lbs.) and Australia alone more than one-third (750 million lbs.) of the total quantity of wool entering world trade (2,150 million lbs.).

During the Imperial Agricultural Research Conference of 1927 the Empire Marketing Board invited representatives of the wool-growing Dominions to discuss the part that scientific research could play in raising the standard of wool production and enhancing the value of wool in relation to other fibres.

The last few decades have witnessed the rapid growth of a new textile industry using artificial fibres produced under scientific control as a direct result of laboratory research. Wool has for so long held an unrivalled position as a textile material that until recent years comparatively little attention has been devoted to a scientific study of its qualities. The physical and chemical characteristics of wool as a natural product and the conditions that determine the special qualities prized by the manufacturer have remained for the most part a closed book.

The practical skill of the wool buyer can of course appraise these qualities with sufficient accuracy. For practical purposes microscopic measurement cannot take the place of a well-trained sense of touch, any more than chemical analysis can rival the senses of smell and taste in appraising perfumes and flavours. But when an attempt is made to find means of deliberately increasing the supply of wools most favoured by the manufacturer, scientific research has to be invoked to determine the physiological conditions of production and to interpret the requirements of the technician into objectives that can be realised by the breeder and pastoralist.

Wool research thus provides unrivalled scope for concerted action between different parts of the Empire. The activities of workers in diverse fields, if inspired by a common goal and co-ordinated by personal contact and the freest interchange of projects and results, may well lead to advances in knowledge and technique that may prove of the utmost practical value to all engaged in the industry. The manufacturer looks for improvements in the raw material and in the processes of manufacture, while the breeder and sheep farmer seek guidance as to the methods of producing those qualities in the fleece which will most enhance its market value. In both fields, co-operative research in the Empire holds out promise of achievement.

The British Research Association for the Woollen and Worsted Industries, under the direction of Dr. S. G. Barker, has already found it necessary to study the nature of wool in its physical, chemical and biological aspects. Its work on the raw material brings it into close relation with those problems of breeding, nutrition, and animal husbandry in which both home and Dominion wool growers have a special interest. It has accordingly been recognised by the Empire Marketing Board as one of the chief centres for wool research in the Empire and has been encouraged with the aid of grants from the Board to fulfil an important role in this field. Next year it is hoped to invite the leading wool research workers in the Dominions to a conference in this country when matters of common interest can be thoroughly discussed.

The present volume has been written by Dr. Barker at the request of the Empire Marketing Board to prepare the way for future developments. It is designed to serve both as a summary of the existing state of scientific knowledge, and to some extent also as a confession of scientific ignorance. It is written not only for specialists but also for agriculturists, industrialists and administrators interested in wool problems ; and especially perhaps for new recruits to biological research who are looking for fresh fields to conquer and new problems of interest in themselves and of economic importance to the Empire.

T. DRUMMOND SHIELS,  
*Chairman of the Research Grants Committee.*

Empire Marketing Board,  
September, 1929.