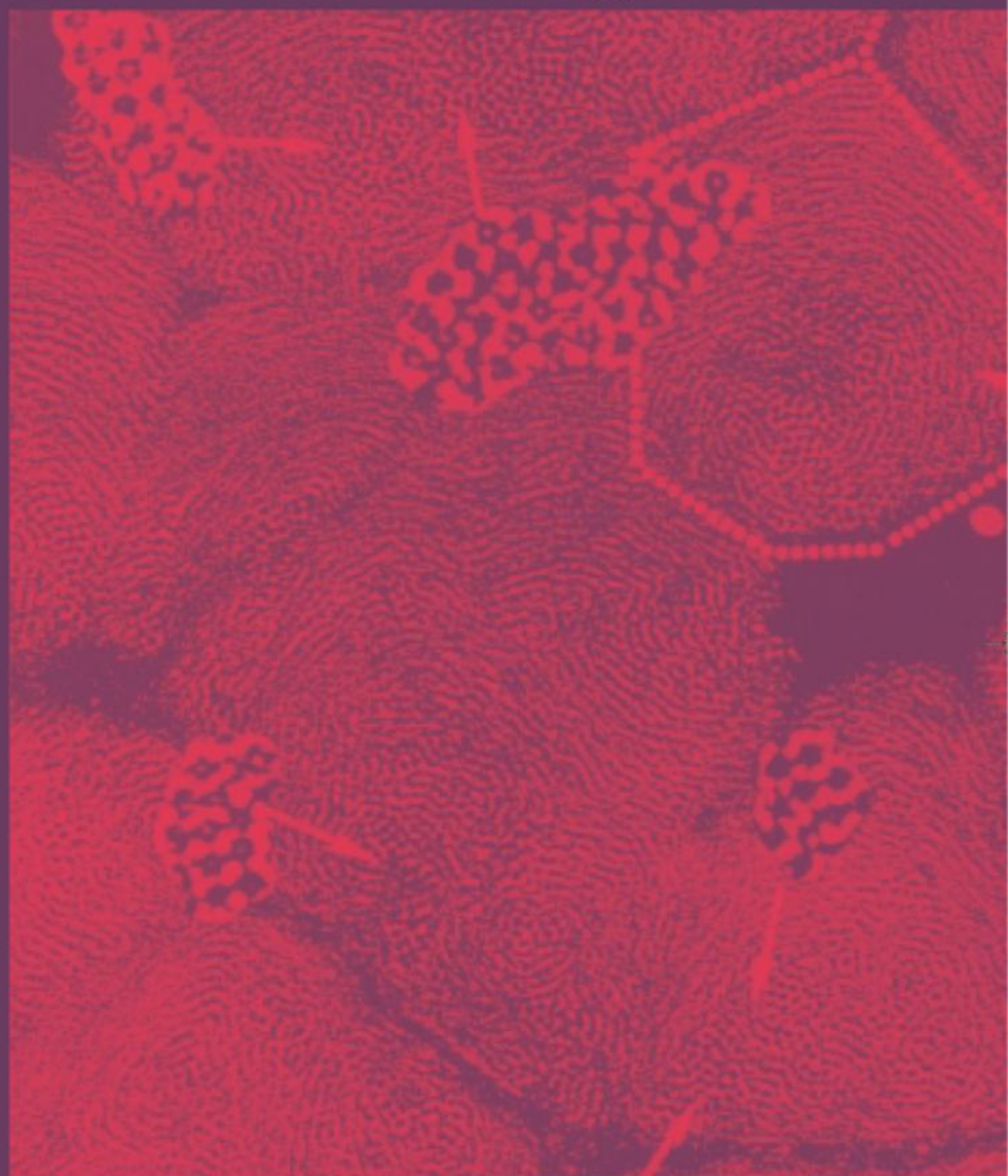


# Wool:

Science and technology



Edited by **W S Simpson** and **G H Crawshaw**



The Textile Institute

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## Wool: Science and technology

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# Wool: Science and technology

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Werner von Bergen and his collaborators released Volume 1 of their *Wool Handbook* in 1963, and two further volumes followed soon after. This series was unique in presenting a broad-spectrum description of every pertinent aspect from sheep-raising to wool consumer products. These texts were subsequently enlarged and reprinted in several editions.

Another notable previous publication was *Wool. Its Chemistry and Physics* by Alexander and Hudson, first published in 1954. More recently, two more narrowly focused texts have appeared, both highly valued in industry and academia. They are Maclaren and Milligan's *Wool Science. The Chemical Reactivity of the Wool Fibre* (NSW Science Press 1981) and Lewis' *Wool Dyeing* (Soc. Dyers and Colourists, Bradford, 1992).

The present text is therefore the first attempt in almost 40 years to present a comprehensive view of the wool industry from fibre marketing through to manufacture of consumer products.

In Chapter 1, I briefly describe a major overhaul that has occurred of the methods of trading wool, basically moving the entire system from one of individual intuitive skill to one based on laboratory measurements of sale lots.

Wool-scouring also has improved enormously in efficiency with a host of small and a few large innovations. Chapter 2 describes this modern technology, which reflects a strong emphasis on environmental concerns such as treating effluent discharges and energy conservation, coupled with far better quality control and capabilities for new add-on processes.

Chapters 3, 4 and 5 describe the principal sectors of current wool science. Understanding of wool fibre morphology, and of physical and chemical properties continues to progress and, in doing so, highlights just how intricate and complex is the wool fibre. Instrumentation, now available for isolating and sequencing wool proteins and for determining their structural arrangement, is beginning to offer a better-informed basis for technologists to devise improved wool products and processes.

Chapters 6 onwards deal in turn with each major aspect of wool pro-

cessing technology. I have to say the contributing authors have been, and in most cases still are, working in the heartlands of these industries. Spinning, weaving and knitting are the three really major physical processes. The Chapter on wool carpets exemplifies how one particular consumer product may be woven, tufted, knotted, or needled to create a great variety of pattern and texture.

Chemical processes that improve appearance or performance of wool products have been brought together in Chapter 7 to better highlight the technical options available to meet special specifications. The development of synthetic fibres with specialised performance features, allied with higher expectations of consumers, has been a strong motivation for creative new processes for wool. Flameproof protective clothing and antistatic carpets are just two fairly recent examples where wool products meet the most demanding requirements.

Wool dyeing innovation is similar to wool-scouring in some respects in that it has been driven by a greater emphasis on energy conservation, shorter treatment times, and better management of effluents, in addition to the publicly more visible competitive demands for high standards of stylish and stable colouration of wool products. The final chapter is intended to put these modern developments in the wool industry into a global context amongst other fibres and textile technologies.

I wish to sincerely thank my co-authors for their efforts to make available an up-to-date text for wool technologists, textile students and so many others interested in this old, yet modern, industry.

*W S Simpson*

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