

CONTENTS.

PART I.

RAW MATERIALS, VARIETIES AND PROPERTIES.

CHAPTER I. 1—18

VARIETIES OF SHEEP AND SOURCES OF SUPPLY.

1. Origin of domestic varieties. 2. Area of distribution. 3. Classification of Sheep. 4. British Sheep. 5. Australian Sheep. 6. New Zealand Sheep. 7. African Sheep. 8. South American Sheep. 9. Indian Sheep. 10. Mohair Goat. 11. Classification and distinguishing marks. 12. Greasy, washed, scoured, slipe, pulled and fallen wools. 13. Botany, Crossbred and Lustre Wools. 14. Baled Wools for Transport and Storage. 15. Auction Sales. 16. Conditions of Sale. 17. Relative Wool Values. 18. Suitability of different wools for specific types of woven and knitted fabrics.

CHAPTER II. 19—28

INFLUENCE OF CLIMATE AND PASTURE.

19. Temperature and its Influence. 20. Relative Influences of Temperature, Skin and Blood. 21. Rainfall and its Influence. 22. Humidity a modifier of Rainfall. 23. Soil and Pasture. 24. Influence of altitude and contour.

CHAPTER III. 29—38

IMPURITIES IN WOOL.

25. Two classes of Impurities. 26. Percentage of Impurities. 27. Foreign Impurities. 28. Natural Impurities.—Yolk. 29. Relation of Secretive Glands to Fibre. 30. Chemical Composition of Yolk. 31. Cholesterol and its commercial uses. 32. Removal and addition of Impurities.

CONTENTS

CHAPTER IV. 39--45

INFLUENCE OF CHEMICAL RE-AGENTS.

33. General Analysis of Wool. 34. Action of Alkalies.
35. Action of Chlorine. 36. Action of Hydrochloric and
Sulphuric Acids. 37. Action of Nitric Acid and various
Chemical Re-agents. 38. Hygroscopicity of Wool.

CHAPTER V. 46--56

THE PHYSICAL STRUCTURE OF THE WOOL FIBRE.

39. The Wool Fibre—Medulla Cells. 40. Cortical
Cells. 41. Cutical Cells. 42. Structural Variations—
Kempy Fibres. 43. Complex Cellular Structure of the
Wool Fibre. 44. Length and Fineness of Wool Fibres.

CHAPTER VI. 57--88

PHYSICAL PROPERTIES OF THE WOOL FIBRE AND INFLUENCE OF STRUCTURE.

45. Characteristic Spinning Properties of Different
Wools. 46. Moisture in Wool and its General Influence.
47. Moisture—Its Influence on Cellular Structure and
Commercial Value of Wool. 48. Felting Properties. 49.
Felting and Moisture. 50. Felting and Fibre Structure.
51. Felting Retardation and Thickening of Cell Walls.
52. Felting and Kempy Fibre. 53. Felting and Medulla
Cells. 54. Felting and Yarn Characteristics. 55. Felt-
ing Accelerators. 56. Felting, Illustrative Examples.
57. Felting, Summary of Conclusions.

PART II.

CLASSIFICATION, WASHING AND DRYING.

CHAPTER VII. 89--96

CLASSIFICATION OF WOOL.

58. Saxony and Silesia. 59. Australian Wools. 60. Cape.
61. Natural Coloured Wools. 62. American Wools. 63.
Mohair, Alpaca, &c. 64. English, Scotch, Welsh and
Irish Wools. 65. Typical Wool Varieties Illustrated.

CONTENTS

CHAPTER VIII. 97—104
WOOL SORTING.

66. Qualities of Wool in a Single Fleece. 67. Wool Sorting operation. 68. Denomination of Qualities of Sorted Fleece. 69. Spinning Capacities. 70. Graphic Division of Fleece into its possible Qualities. 71. Difference of Fibre in same Fleece.

CHAPTER IX. 105—115
WOOL SCOURING AND WASHING.

72. Object of Wool Washing. 73. Suint and Desuinting. 74. Wool Scouring. 75. Water and its Impurities. 76. Detergents. 77. Action of Soda on the Wool Fibre. 78. Soap Recipes. 79. Analysis of Soap. 80. Temperature of the Scouring Solution.

CHAPTER X. 116—150
WOOL WASHING MACHINERY AND PROCESSES.

81. Hand Washing. 82. Modern Washing Machines. 83. McNaught's Harrow Type Wool Washing Machine. 84. McNaught's Swing Rake Type of Washing Machine. 85. Squeezing Rollers and Pressure of Same. 86. Action of Lattice Feed and Swing Rakes. 87. Petrie's Rake Scouring Machine. 88. Petrie's Type with Spring Compression. 89. Petrie's "Harrow" Type of Wool Scouring Machine. 90. Petrie's Automatic Self Cleansing Wool Washing Machine. 91. Alkaline Scouring. 92. Volatile Solvents. 93. Comparisons.

CHAPTER XI. 151—166
WOOL DRYING.

94. The science of Wool Drying. 95. Drying Tests—Research Results. 96. The Hydro Extractor. 97. The Table Dryer. 98. Petrie's and McNaught's. 99. Textile Conveyor. 100. Principle and processing characteristics.

CONTENTS

CHAPTER XII. 167—171

WORSTED AND WOOLLEN YARNS : A COMPARISON.

101. Wool suitable for Worsted or Woollen Yarns.
102. Structural differences between Worsted and Woollen Yarns. 103. Types of Cloth for which Worsted and Woollen Yarns are most suitable. 104. Differences of manipulation of Wool into Worsted or Woollen Yarn. 105. Illustrative differences between Worsted and Woollen Yarns.

PART III.

WORSTED PREPARING.

CHAPTER XIII. 172—179

GILLING OR LONG WOOL PREPARING.

106. Different Systems of Preparing Wool for Worsted Yarns. 107. Gilling Machine Mechanism. 108. Plan of Rollers, Screws and Gearing Details of Gill Box. 109. Gill Box—Sectional Elevation of Rollers and Fallers. 110. Process of Gilling. 111. Setting of machine. 112. Function and Importance of Fallers.

CHAPTER XIV. 180—197

DRAFTING IN GILL BOXES.

113. Draft. 114. Suitable Drafts. 115. Calculating the Draft. 116. Gauge Point. 117. Drafting Example—Total Draft. 118. Alternative Solution to 117. 119. Draft. 120. Exercises on Drafting. 121. Summary of Gilling and Drafting. 122. Knocking-off Motion. 123. Calculations on “turn-off” in Gill Boxes. 124. Fluted Rollers.

CONTENTS

CHAPTER XV. 198—208

DOUBLE OR TWO-SCREW GILL BOXES.

125. Efforts to Reduce Breakages of Wool Fibres.
126. Double Threaded Screws. 127. The Expanding
Screws. 128. Double Screw Gill Boxes—Calculation
of Drafts. 129. Details of Double Screw Gill Boxes.
130. Drafting Examples.

CHAPTER XVI. 209—218

OILING WOOL.

131. Object of Oiling Wool. 132. Suitable Oils—
Gallipoli. 133. Oeline Oil. 134. Oil Emulsions. 135.
Wool Lubricant Mechanisms. 136. Oiling Carded Wools.
137. Proposed Standard Allowance of Oil. 138. Dry
Spun Yarns.

PART IV.

WORSTED CARDING OR SHORT WOOL
PREPARING.

CHAPTER XVII 219—228

OPENING PROCESSES AND REMOVAL OF LOOSE
AND VEGETABLE IMPURITIES.

139. Object of Carding for Worsted. 139a. Cots and
their Removal. 140. The Double Swift Willey. 141
Process of Opening. 142. Burrs and Burring. 143.
The Burring Machine. 144. Operation of Burring.
145. Burring Accessories to Carding Machine. 146. Car-
bonising or Extracting. 147. Twaddle Degrees. 148.
Carbonising Process.

CONTENTS

CHAPTER XVIII. 229—241

OBJECT AND PROCESS OF WORSTED CARDING.

149. General purpose of Worsted Carding. 150. The Worsted Card—General Details. 151. Automatic Feeding. 152. Sizes of the various Rollers. 153. Driving the Card Rollers. 154. Formula for Calculating Speeds of Card Rollers. 155. Principle of Carding.

CHAPTER XIX. 242—254

CARD CLOTHING.

156. Forms of Card Clothing. 157. Clothing Foundation. 158. Card Wires. 159. Carding Properties of Different Card Teeth. 160. Setting Wires in Clothing. 161. Card Clothing Calculations. 162. Clothing for Worsted Card. 163. Clothing for the Opening Rollers. 164. Neps, Lumps or Motes.

CHAPTER XX. 255—267

SETTING, SPEED, FUNCTIONS AND GRINDING OF THE VARIOUS CARD ROLLERS.

165. Setting the Rollers. 166. Relative Speeds of the different Rollers. 167. Functions of the Card Rollers. 168. Grinding.