CONTENTS.

PART I.
The Evolution of Figure and Jacquard Weaving. 17-66.

CHAPTER I.

Methods of ornamenting textiles—Fundamental types of woven fabrics.

CHAPTER II.

Warp shedding—Chief principles of warp shedding—Centre shedding—Bottom shedding—Open shedding—Semi-open shedding—Warp shedding mechanisms.

CHAPTER III.

Hand Loom Weaving—Treadle Shedding. 32-44.
Factors in pattern production in treadle weaving—Old diaper patterns—Combined treadle and twilling mechanism.

CHAPTER IV.

The Draw Loom. 44-53.
Its origin—Details of the draw loom—Principle of lashing the pattern—Mechanical aids for the ‘draw-boy’—Mechanical draw-boy.

CHAPTER V.

British Efforts to Supplement or Supersede the Draw Loom. 54-60.
The original compound harness and shaft mounting—The comb draw loom—Cross’s counterpoise harness—Taylor’s double necks.

CHAPTER VI.

French Efforts to Supersede the Draw Loom. 61-66.
Bouchon’s draw loom—M. Falcon’s improved draw loom—Vaucanson’s epoch-making changes—Joseph M. Jacquard.
PART II.
Modern Jacquard Mechanisms. 67-258.

CHAPTER VII.
The Single Lift Jacquard. 67-83.
Definition of a Jacquard—Details of the single lift Jacquard—Swing 'batten' card cylinder—Reciprocation of the 'head lever'—Action of the combined parts in the Jacquard—Rotating the card cylinders—Principle of the swing lever card cylinder—Rotating the card cylinder on slide principle with 'swan neck'—Rotating the card cylinder on 'spindle slide' and bell crank lever principle—Timing the various movements on single lift Jacquards—Figuring capacity of Jacquards.

CHAPTER VIII.
Double Lift Jacquard Machines. 84-116.
Double lift single cylinder Jacquard—Driving the 'head levers' ordinary method—Independent drive for single cylinder, double lift Jacquard—The Bradford card cylinder motion with escapement apparatus—Double acting Jacquard—Double cylinder—Driving the two card cylinders—Swivel slide double cylinder motion—Automatic stop motion for double cylinder Jacquards—Double neck cords and link motion, a comparison—Link motion—Draper's open shed Jacquard with link attachment—Springless Jacquards—Varieties of Jacquard driving—Cam driven Jacquards—Chain driving motion—Compound driving of two double lift Jacquards—Oscillating pulley—Two lever principle—Problems on uniform depth of shed with two or more machines—Bradbury's direct lever counterpoise.

CHAPTER IX.
Cross Border Jacquard Mechanisms. 117-130.

CHAPTER X.
Twilling Jacquards. 131-159.
Purpose of twilling Jacquards—The Bessbrook or Irish twilling Jacquard—Arrangement of needles and hooks, 8 leaf twill—Mechanism of card and twilling cylinders—Card cylinder—Details of the intermittent mechanism—Twilling cylinder—Action of the card cylinder mechanism—Action of the twilling mechanism—Construction of twilling tappets and ratchet wheels—Lags and pegs in lieu of twilling tappets—The Scotch twilling Jacquard—Carver's combined 5 and 8 leaf twilling motion—Grouping of needles and hooks for 5 and 8 leaf twills and table for same—Use of the same pattern cards for different widths and fineness of cloth—Normal modifications—Special modification and grouping of hooks and table for same—Twilling and ordinary Jacquards, a comparison—Advantages and defects of the twilling motion.

CHAPTER XI.
Compound Driving of Twilling Jacquards. 160-171.
Compound levers with dead weight counterpoise—Single lever with spiral spring counterpoise—Combined action of the eccentric and the counterpoise—Compound levers, with counterpoise of solid drawing rods and spiral springs—Problems on compound driving and value of counterpoise—Work stored in spiral springs.
CONTENTS.

CHAPTER XII.

Pressure and Split Harness Weaving and Mechanism. 172-190.


CHAPTER XIII.

Gauze or Leno Jacquards. 191-209.

Nomenclature of gauze mounting—Mechanical details of gauze mounting—Plan of gauze harness and web—Easing motion auxiliary—Driving the Jacquard head and easing mechanism—Transferring the design on to point paper—Figuring with one doup and an ordinary Jacquard mounting—Relative balance of structure and combinations of gauze and ordinary weave interlacings.

CHAPTER XIV.

The Gauze Reed and Jacquard. 210-222.

Structure and types of fabrics woven by the gauze reed—Details and operation of the Anderson foundry gauze reed mechanism—Intermittent reciprocation of the gauze reed—The easing rod and its action—Constructional details of the gauze reed—Tug reed reciprocating mechanism.

CHAPTER XV.

The Swivel and Jacquard. 223-244.

Extra warp and weft figures—Relative advantages of extra warp and weft spotting—Object and advantage of swivel weaving—Spotting brocades and figured fabrics—Compound vesting spotted with the aid of the swivel mechanism and Jacquard mounting—Swivel mechanism—Requisite action of the swivel frame and shuttles—Details of the swivel controlling mechanism—Vertical reciprocation of the swivel frame—Neutralising the operative action of the weft fork—The lateral reciprocation of the swivel shuttles—Automatic detachment of the picking mechanism—Regular and intermittent action of the picking mechanism—Supplementary lateral movement of the swivel frame and swivels.

CHAPTER XVI.

Index and Special Types of Jacquard Machines. 245-258.

The Verdol index and fine pitch Jacquard—Details of Schroer's Verdol machine—Action of the Jacquard cards and mechanism—Details of mechanism and driving the needle plates—Mechanism and driving of the Jacquard head—The centre shed Jacquard—Brussels and Wilton carpet Jacquard—The double cloth and Ingrain carpet Jacquard.

PART III.

Harness Mounting. 259-315.

CHAPTER XVII.

Principles and Routine of Harness Mounting. 259-268.

Sequence of processes in harness building—Variety of knots in harness tying—Tying below and above the board, a comparison—Making the upper and
lower couplings—Tugging operation—Warping the harness twines—Leveling
the harness, 'Below the board'—'Above the board.'

CHAPTER XVIII.
Principles and Varieties of Harness Mounting. 269-302.
The 'first hook' in a Jacquard—Systems of harness mounting—The Norwich
system—London or French system—Comberboards and harness reeds—Marking
off the comberboard—Classification of harness ties—The single tie—The repeating
or 'lay over' tie—The centre, 'point' or turnover tie—Complex ties—
Harness mounting, examples—Damask tie with repeating centre—Cross border
tie, with part single in centre—Damask tie, with point and single centre—
Apparent increase in the normal figuring capacity of Jacquards—Part repeat of
'single' in border—Re-arranged 'single' in border—Inversion and repeat of the
point tie in the border—Point tie border, with repeating centre—Double point
tie—Border patterns formed from repeating centre—Tying up the harness to
serve for two widths of cloth—Mechanism for varying the width of the harness
—The necessity and use of the heck—Heck mechanism—Hecks adjustable—
Heck problems.

CHAPTER XIX.
Harness Mounting, Problems. 303-315.
Cords per tug and number and size of repeat—Capacity of Jacquard to
produce given pattern—Width of harness in comberboard and size of repeat—
Cords per hook for a given tie—Number of Jacquard machines required for a
given mounting—The total width of harness and width of each section for a
given tie—Varving the set of the harness, fineness of cloth and size of pattern—
Casting out—Examples—Suitable sizes of point paper and shots per card for
ordinary and twilling Jacquards—36 exercises with answers.

PART IV.
Designing, Card Stamping, Repeating and Lacing. 316-347.

CHAPTER XX.
Design Preparation and Card Stamping. 316-323.
Factors in designing—Transferring the design to point paper—Card stamping
or cutting—The piano card stamper—Details of mechanism for same—Mechan-
ism for reciprocating the punch box and punches—Combined action of the
mechanisms.

CHAPTER XXI.
Card Repeating. 324-329.
Automatic card repeaters—Details of repeater—Reciprocation of the punch
box—Combined action of the mechanisms.

CHAPTER XXII.
Card Lacing and Lacing Machines. 330-347.
Hand lacing—Automatic card lacing machines—The rotary wheel
machine—Shuttle vibratory and lock-stitching mechanism—Needle reciprocating
mechanism—Mechanism and rotation of the feeding wheels—The 'Rapid'
automatic card lacer—General principles of the mechanism—Mechanism and
operation of the card chain—Mechanism and action of the feeding needle—
Operation of the shuttle—Card wiring—Card iron or cradles.