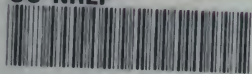


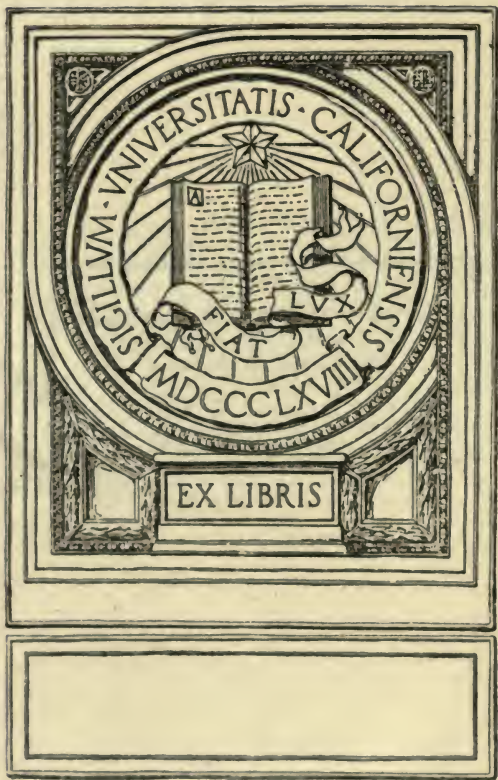
SILK MILL COSTS

CLARENCE MUNRO DAY

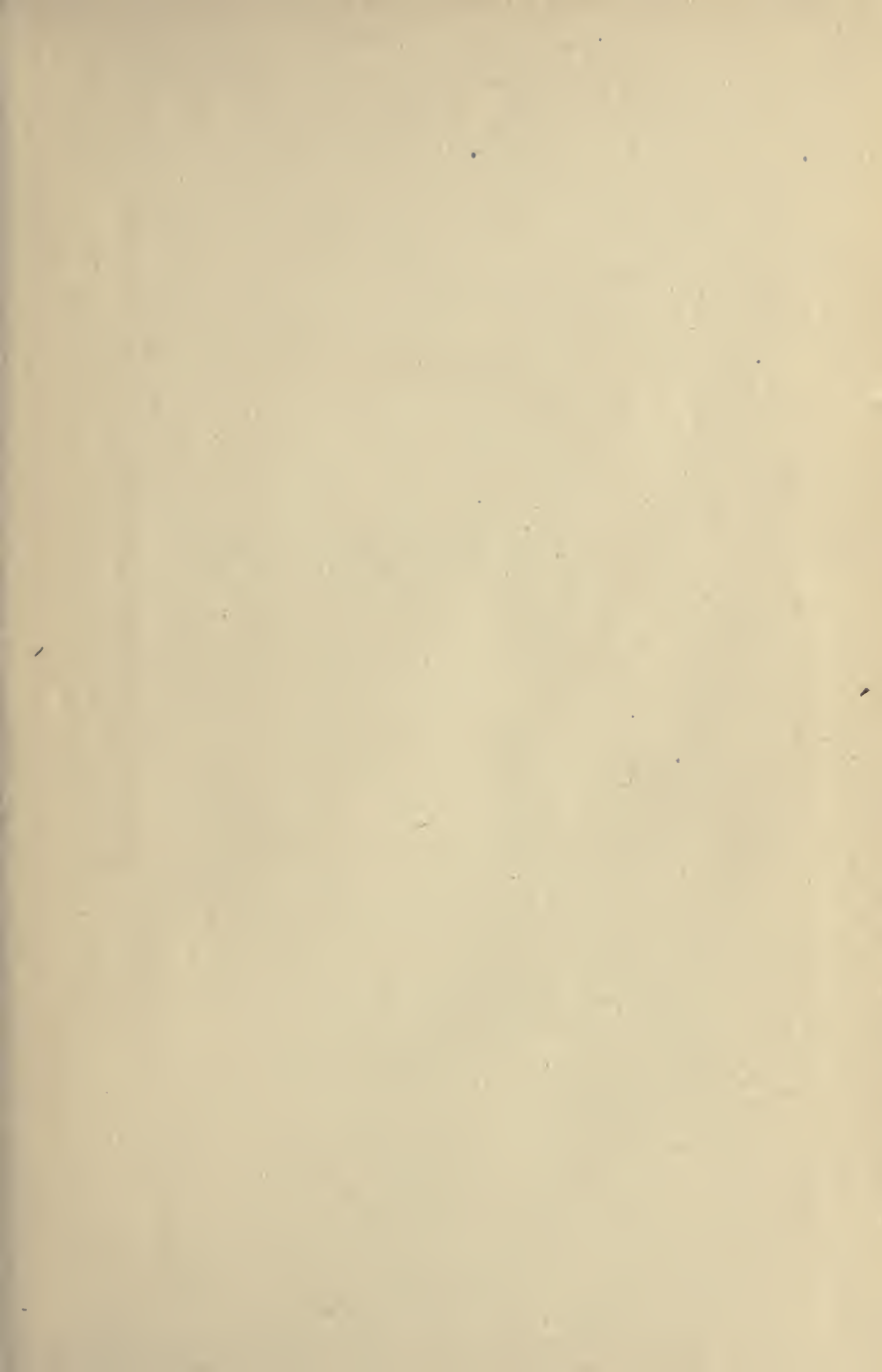
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SILK MILL COSTS

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BY

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1912

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152 MADISON STREET, BROOKLYN

NEW YORK

H F 5686
T 53 D 3

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—
PUBLISHED FEBRUARY, 1912

TO THE
ANNALS

THE PLIMPTON PRESS NORWOOD MASS U.S.A

INTRODUCTION

To install a cost system in a silk mill is generally considered a very difficult matter, and most proprietors regard it with apprehension. It is hard to understand why this is so, for the silk is valuable, and it requires very complete records in order to prevent loss by carelessness or theft. Where such records are made, the foundation of a cost system already exists, and the installation is simply a matter of arranging the general control of the various processes.

This book is based upon a long experience in cost accounting, and the novel methods of computing the cost of making the warps and weaving the goods, have proven accurate and inexpensive in operation. They are simple and complete and will no doubt appeal to concerns that appreciate the need, because they can be adopted without disturbing the harmony of the mill.

The book first presents a synopsis of the complete system, to enable you to comprehend its operation, and after giving a complete outline of the requirements, describes in detail the methods and submits the important forms to illustrate the work.



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SILK MILL COSTS

SILK MILL COSTS

I. OUTLINE OF SYSTEM

"Progress never comes by revolution, but by evolution."

- To install a cost system in a silk mill does
- 1 not necessitate a revolution. By long experience, each mill has developed methods that are peculiarly suited to the conditions existing in it, and any attempt to install a system simply because it was successful elsewhere, is sure to come to grief, if you endeavor to make the mill conform to the system, instead of making the system conform to the mill. Rad-
 - 2 ical changes should be regarded suspiciously, and carefully considered before attempting to put them in operation, for it should only be necessary to arrange the records to meet the
 - 3 needs of the system. If you keep this idea in mind, and endeavor to adjust your methods so as to get the required information, the results will be more satisfactory than if you rush ahead and make unnecessary changes.
 - 4 In the operation of this system, first compute the cost of preparing the material. This includes every expense until the material is used for warp or filling. Next, figure the

cost of making all the warps that were made
5 during the period. (In this illustration, I
take the period of three months from Jan-
uary 1st to April 1st, 1900.) After deter-
mining the cost of making the warps, the
quantity used is obtained from the warp
records (Reference No. 117), and the cost of
making the various kinds and widths of cloth,
is computed. This is the mill cost, and the
total mill cost of all the goods, according to
the cost sheet, should equal the total expend-
iture shown in the statement made from the
trial balance. A rate is added to the cost of
each for finishing, and the result is the cost
to produce. The price to sell is based upon
this cost (See Reference No. 218).

6 Closing Periods

The cost system should be closed every
quarter, or in shorter periods if desired. If
only the inventories of raw material and
goods on the looms are taken, it will be a very
simple matter, even in the largest mills,
7 when they operate upon this plan. It is
never necessary to close down in order to take
the inventory required to figure the cost.
The annual inventory can be taken in the
customary way, if desirable. The ledger

accounts can be closed by charging the cost of the production to the merchandise account.

SYNOPSIS

- 8 *First*, Figure the cost of preparing the material;
- 9 *Second*, Figure the cost of making the warps;
- 10 *Third*, Figure the cost of weaving the cloth;
- 11 *Fourth*, Add the cost of finishing.
- 12 After the cost has been computed, a percentage should be added for mill expenses. This will give the mill cost. To the mill cost add the cost of finishing, for the cost
- 13 to produce. Consider the percentage of the sales necessary to provide for selling expenses and for profit; deduct that percentage from 100 to determine the percentage of this cost
- 14 to the sales. To obtain the price to sell, in order to realize the desired profit, multiply the cost to produce by 100 and divide by the percentage of the cost to the sales. (See Reference Nos. 218 and 154.)
- 15 The cost of preparing the material includes:
- 16 (a) Value of silk used,
- 17 (b) Value of yarn used,

- 18 (c) Cost of throwing,
19 (d) Cost of dyeing.
20 The cost of making the warps includes:
21 (a) Value of material used,
22 (b) Cost of throwing organzine,
23 (c) Cost of dyeing material used,
24 (d) Cost of winding material used,
25 (e) Cost of warping and beaming.
26 The cost of weaving includes:
27 (a) Value of warp used,
28 (b) Cost of twisting on the looms,
29 (c) Cost of filling required,
30 (d) Cost of dyeing the filling,
31 (e) Cost of winding the filling,
32 (f) Cost of weaving,
33 (g) Cost of picking,
34 (h) Provisions for mill expenses.
35 The added cost of finishing includes:
36 (a) Piece dyeing,
37 (b) Finishing.

REQUIREMENTS OF THE SYSTEM

39 Take Inventory (REFERENCE No. 250)

An inventory must be taken every three months in order to determine positively the exact quantities of material actually consumed during the period.

40 Warp Record (EXHIBIT A)

A record must be kept of the warps made during the period, and the following information obtained regarding each quality — pattern — width.

- 41 (a) Yards of warp made,
- 42 (b) Material used or required,
- 43 (c) Yardage off the looms,
- 44 (d) Finished yardage.

45 Pay Rolls

The weekly pay rolls must be analyzed in order to keep the labor costs under control, and supply the cost of each operation.

46 Production Records

The results obtained in each department must be recorded in order to figure the cost of each operation.

47 General Books

The general books must be arranged so that a positive account of the material used will be available, without examining the entire records. The accounts must be classified so that a statement similar to Reference No. 369 can be prepared by arranging

the items of the trial balance, without making adjustments.

48 Order of Procedure — To Commence the System

- 49 (1) Take inventory,
- 50 (2) Prepare warp sheets for new quarter. Execute a warp sheet for each quality — pattern — width; and enter on the warp sheets the parts of warps included in the inventory. To illustrate the manner of preparing the warp sheets see entries (Reference Numbers 121, 122, 123, and 124).
- 51 They are for fractional warps, of this quality — pattern — width, that were included in the inventory of January 1, 1900. (See Reference No. 105.)
- 52 (3) Make an analysis of pay rolls. (See Reference No. 220.)
- 53 (4) Instruct the foremen of the departments regarding the preparation of the following records:
- 54 *Winding*: Wages and weights of winding organzine and tram, and quilling tram. (See
- 55 Reference No. 234.)
- 56 *Warping*: Time required for each quality
- 57 — pattern — width. (See Reference No. 236.)

- 58 *Twisting*: Time required for each qual-
59 ity — pattern — width. (See Reference No.
240.)
- 60 (5) Arrange voucher journal. (See Ref-
erence No. 342.)

II. WARP RECORD

61 Description of Warp Record (EXHIBIT A)

The most important record of the system is this warp record. It should show all the details, of each quality — pattern — width. One of these forms should be executed for each quality — pattern — width.

- 62 (1) The name of the fabric; (2) The character of the harness to be used in weaving; (3) The quality number; (4) The pattern number; (5) The width of the goods to be woven; (6) The quarter of the year during which the warps were made; (7) The kind
- 63 of material used for warp; (8) The dye of the material used for warp; (9) The quantity of material computed to be required to make the yards of warp, No. 10; (11) The character of the filling to be used in
- 64 weaving the fabric; (12) The dye of the filling to be used; (13) The quantity of filling computed to be required to weave the yards No. 14; (15) The picks per inch of the fabric; (16) The reed used; (17) The

- 65 total number of ends in each warp; (18) In this column the numbers of the warps are listed. First, the fractional warps from the inventory, then draw a line across the form (see Reference No. 124). Second, list the new warps as they are made. (19) In this column, opposite each warp number, insert
- 66 the length of the warp; (20) In this column, opposite each warp number, insert
- 67 the weight of the warp; (21) In this column, opposite each warp number, insert the total yards of cloth cut from each warp, (when it is completed). At inventory taking insert the total yards of cuts made from
- 68 each warp up to date; (22) In this column, opposite each warp number, insert the total weight of the cuts, entered in column No. 21; (23) These columns are only used when
- 69 taking inventory; (24) In this column enter the balance of the warp still on the
- 70 loom (whether it is woven on the loom or
- 71 not); (25) In this column enter opposite each warp number the yardage woven on the loom. This is required in order to figure the value of the filling in the yardage woven on the loom.
- 72 If the goods differ in quality, pattern, or width, a record should be made for each.

EXHIBIT A. WARP RECORD.

Quality No. — (3) —
 Pattern No. — (4) —
 Name of Texture — (1) — Width — (5) — Inches
 Style of Harness — (2) — Quarter — (6) —
 Warp — (7) — Dyed — (8) — Requires — (9) — for — (10) — Yards
 Filling — (11) — Dyed — (12) — Requires — (13) — for — (14) — Yards
 Picks per inch — (15) — Reed — (16) — Total ends — (17) —

(18) Numbers of the Warps	(19) Length of Warps	(20) Weight of Warps	(21) Yards Off Looms	(22) Weight Off Looms	(23) When taking Inventory	
					(24) Balance of Warp	(25) Woven on the Looms

To illustrate: If quality number 900 is made up in patterns 114 and 115, 2.24 inches and 36 inches wide, four records should be made, namely:

73 (1) Quality No. 900, Pattern No. 114, Width 36 inches.

74 (2) Quality No. 900, Pattern No. 114, Width 2.24 inches.

75 (3) Quality No. 900, Pattern No. 115, Width 36 inches.

76 (4) Quality No. 900, Pattern No. 115, Width 2.24 inches.

77 If shooters are run across, or Jacquard harness used, the records for weaving them should not be confused with the records of plain goods.

III. COMPUTING THE COST OF WARPS

79 Exhibit B, Summary of Warps

80 This form is a summary of the warps made during the quarter. Columns Nos. 1, 2, and 3 should show the quality — pattern — width of each fabric.

81 Column No. 4, Warps Made

The total yards of warp that were made
82 for each fabric should be obtained from the form Exhibit A, Warp Record. An illustration of the results shown, at the end of the quarter, on the warp record for No. 900-115-36" is presented at Reference No.
83 119. The first items Reference Nos. 121, 122, 123, and 124 are not considered in compiling this exhibit, for they were fractional warps included in the inventory at the beginning of the period. (See Reference No. 99.)

84 Column No. 5, Material Used

85 The charge for material should be based upon the actual consumption of material

SILK MILL COSTS

COMPUTING THE COST OF MAKING THE WARPS. EXHIBIT B.

(1)	(2)	(3)	(4)	(5)			(6)	(7)	(8)	(9)	(10)	(11)	(12)
				Material Used									
Qual-ity	Pat-tern	Width	Yards of Warp Made	Weight	@	Value	Throw-ing	Dyeing	Wind-ing	Warp-ing	Non-prod. Labor	Total Cost	Aver-age for 100 Yards
(13)	900	36	8500	510	3.60	1836.00	306.00	102.00	40.80	55.25	19.21	2359.26	27.76
(14)	900	24	10,000	400	3.60	1440.00	240.00	80.00	32.00	57.00	17.80	1866.80	18.67
(15)	900	2.24	30,500	2440	3.60	8784.00	1464.00	488.00	195.20	286.70	96.38	11314.28	37.10
(16)	800	36	80,000	3200	3.40	10880.00	1920.00	960.00	256.00	321.80	115.56	14453.36	18.07
(17)	700	27	30,600	1530	3.50	5355.00	918.00	382.50	122.40	153.20	55.12	6986.22	22.83
	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-
(18)	-	-	159,600	8080	-	28,295.00	4848.00	2012.50	646.40	873.95	304.07	36979.92	-
			(19)	(20)		(21)	(22)	(23)	(24)	(25)	(26)	(27)	

used. If that is an unknown quantity, the material required (see Exhibit A, Nos. 7, 8, 9, and 10) should be used as a basis
86 for determining the quantity. If the quantity used is based upon the required amount, prove the total weight No. 20 (with the ledger) before figuring the value of the material used for warps.

87 Silk, Schappe, and Yarn for Warp

88 When silk, schappe, and yarn are used for making warps, the form Exhibit A should provide a column like No. 5 for each.

89 Column No. 6, Throwing

90 Figure the cost of throwing the orgazine entered in column No. 5 at the cost per pound paid to the throwster.

91 Column No. 7, Dyeing

Figure the cost of dyeing the material entered in column No. 5, at the cost per pound paid to the dyer.

92 Column No. 8, Winding

Figure the cost of winding the material entered in column No. 5, at the average cost of winding.

93 Column No. 9, Warping

Figure the cost of warping at the labor cost of warping the warps for each fabric, determined as illustrated, Reference No. 236.

94 Column No. 10, Nonproductive Labor

Figure the nonproductive labor to be added for the labor charged in columns Nos. 8 and 9 of each fabric, and enter it in column No. 10. To determine the percentage see Reference No. 232.

95 Column No. 11, Total Cost

Add the columns Nos. 5, 6, 7, 8, 9, and 10 and enter the sum in column No. 11, which should be the total cost.

96 Column No. 12, Average

Divide the total cost, column No. 11, by the yards of warp made, column No. 4, for the average. Enter in column No. 12 the average per 100 yards of warp.

7 Value of Warps Used

When the inventory was taken on January 1, 1900, the warp sheet, Exhibit A, for quality 900-115-36'' (see Reference No.

119), had four warps on the looms that were not completed. Add the percentage for take-up to the yardage off looms and deduct the sum from the original length of the warp, the difference is considered the balance of warp still on the loom. The yards woven on the loom is taken, but it does not reduce the yards of warp. The value of the filling, required to weave the yards woven on the loom, must be considered when preparing the inventory.

99 SUMMARY OF ALL WARPS ON HAND JANUARY 1, 1900

100	900 - 115 - 36"	600 yards @ \$28.10 = \$ 168.60
101	900 - 114 - 24"	101 yards @ \$19.00 = \$ 19.19
102	900 - 114 - 2.24"	2110 yards @ \$37.00 = \$ 780.70
103	800 - 15 - 36"	1000 yards @ \$18.04 = \$ 180.37
104	700 - 6 - 27"	817 yards @ \$23.05 = \$ 188.32
105	Total value of warps in inventory. . . .	\$1337.18

(See Reference No. 107)

106 SUMMARY OF ALL WARPS FOR THE QUARTER

107	Inventory of warps January 1, 1900.	\$ 1337.18
	(See Reference No. 105)	
108	Warps made as per warp sheet	\$36979.92
	(See Exhibit B, Item 27)	
109	Total	\$38317.10
110	Warps used as per weaving sheet	\$36539.59
	(See Exhibit C, Item 29)	
111	Inventory of warps, April 1, 1900	\$ 1777.51

112 SUMMARY OF WARPS USED DURING THE QUARTER

113	Quality 900, Pattern 115, Width 36".	
	Inventory, January 1, 1900, 600 yards	\$ 168.60
	(See Reference No. 100)	
114	Warps made during the quarter	\$ 2359.26
	(See Exhibit B, Item 13)	
115	Total	\$ 2527.86
116	Warps, Inventory at closing	\$ 741.85
	(At average cost)	
117	Warps used during quarter	\$ 1786.01
	(See Exhibit C, Column 6)	

ILLUSTRATION OF WARP RECORD

119 Quality 900 - 115 - 36"

120	Numbers of Warps	Yards of Warp	Yards off Looms	Record for Inventory	
				Balance of Warp	Woven on Loom
121	1170	41	39	—	—
122	1171	152	144	—	—
123	1174	97	92	—	—
124	1175	310	292	—	—
		600			
125	1179	500	471	—	—
126	1180	500	470	—	—
127	1181	500	473	—	—
128	1194	1000	940	—	—
129	1195	1000	941	—	—
130	1196	1000	943	—	—
131	1210	500	471	—	—
132	1211	1000	408	568	40
133	1213	1000	370	608	37
134	1214	1000	—	1000	23
135	1215	500	—	500	—
		8500	6054	2676	100

Warps in work: 9100 yards.

Balance on Looms: 2676 yards

Quantity used: 6424 yards.

IV. COMPUTING THE COST OF WEAVING

137 Exhibit C, Summary of Weaving

138 This is a summary of the cloth woven during the quarter. In column No. 1 enter the numbers identifying each fabric. (If desirable the colors may be separated from the blacks.)

139 Column No. 2, Yardage Off the Looms

The total yards of cloth made should be obtained from the warp record, Exhibit A. An illustration of the results shown on the warp record for No. 900-115-36'' is presented at Reference No. 119. The total yards off the looms, of each fabric, is charged in this column No. 2.

140 Column No. 3, Warp Used

The quantity of warp used should be obtained from the warp record, Reference No. 119. From the total yards of warps charged to the warp record, deduct the balance still on the looms, the difference is the quantity of warp used. This should be entered in column No. 4.

COMPUTING THE COST OF WEAVING

(1) Texture	(2) Yard- age off the Looms	(3) Warp Used			(7) Twist- ing	(8) Filling Used		
		(4)	(5)	(6)		(9)	(10)	(11)
(21) 900 115 36"	6054	6424	27.76	1786.01	38.54	256	3.25	832.00
(22) 900 114 24"	9001	9501	18.60	1767.00	38.25	253	3.25	822.25
(23) 900 114 2.24"	28819	30608	37.15	11367.90	305.80	2450	3.25	8362.50
(24) 800 15 36"	76513	80101	18.25	14618.25	240.30	4005	3.40	13617.00
(25) 700 6 27"	29470	30570	22.90	7000.43	123.60	2142	3.10	6640.20
(26) —	149,857	157,204		36,539.59	746.49	9106		30,273.95
	(27)	(28)		(29)	(30)	(31)		(32)

THE TEXTURE EXHIBIT C

(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Throwing Tram	Dyeing	Wind- ing	Weav- ing	Picking	General Non- produc- tive Labor	Mill Expenses	Total Mill Cost	Aver- age per Yard
76.80	230.40	115.20	605.40	60.54	163.94	586.32	4495.15	.7425
75.90	227.70	117.00	595.40	89.31	168.00	585.12	4485.93	.4984
735.00	2205.00	1102.50	3836.27	287.72	1106.45	4396.37	33705.51	1.1696
1201.50	2803.50	1381.50	3845.30	769.06	1247.23	5958.54	45682.18	—
642.60	1071.00	642.60	1161.80	290.45	443.68	2702.45	20718.81	—
2731.80	6537.60	3358.80	10,044.17	1497.08	3129.30	14,228.80	109,087.58	
(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	

141 Column No. 5, Rate for Warp

The average cost of making each class of warps computed on the Summary of Warps, Exhibit B, No. 12, should be entered in this column No. 5. The value of the warps used should be obtained from the summary. (See Reference No. 117.)

142 Column No. 7, Twisting

The cost of twisting should be based upon the average paid for 100 yards twisted on the looms. (See Reference No. 240.)

143 Column No. 8, Filling Used

If the actual quantity of filling prepared for each fabric is not recorded, the charge for filling used should be based upon the requirements, entered on the warp records, Exhibit A, Nos. 13 and 14. Before extending the cost of filling used, prove out the total weight, Exhibit C, No. 31, with the consumption shown by the ledger account and the inventories.

144 Column No. 12, Throwing

Charge in this column the cost of throwing the raw silk charged in column No. 9, as having been used for filling.

145 Column No. 13, Dyeing

Charge in this column the cost of dyeing the material charged in column No. 9, as having been used for filling.

146 Column No. 14, Winding

Charge in this column the cost of winding and quilling the filling charged in column No. 9.

147 Column No. 15, Weaving

Charge the cost of weaving, increased by the nonproductive labor in the weaving department. (See Reference No. 229.)

148 Column No. 16, Picking

Charge in this column the cost of picking all the cloth, whether or not it is in the picking room. In making up the inventory, the cloth unpicked can be considered in order to prove the result.

149 Column No. 17, Nonproductive Labor

In this column charge a percentage of the totals, Nos. 30, 35, 36, and 37. This percentage should be based upon the percentage of the nonproductive labor. (See Reference No. 232.)

150 Column No. 18, Expense Burden

In this column charge a percentage to provide for mill expenses. If the expense burden is distributed on the basis of labor and material, add together totals Nos. 29, 30, 32, 33, 34, 35, 36, 37, and 38; and figure the percentage upon the sum. If the expense burden is distributed on the basis of productive labor, add totals Nos. 30, 35, 36, and 37; and figure the percentage upon the sum.

152 Column No. 19, Total Cost

Add the items charged against each fabric in the columns for the details of the cost, and enter the sum of each in this column. The grand total, No. 40, should equal the cost of production shown by the ledger statement, Reference No. 378.

153 Column No. 20, Average Cost per Yard

Compute the average cost of each fabric by dividing the cost in column No. 19 by the yardage in column No. 2. Enter the average cost of each fabric in column No. 20.

154	Figuring price to sell, 900 - 115 - 36".	
155	Mill cost, exhibit C (20), 100 yards	\$74.25
156	(If 100 yards off the loom will finish 105 yards.)	
157	Finishing 105 yards at \$.08	8.40
		<hr/>
158	Total cost to produce 105 yards	\$ 82.65
159	Providing 10% for selling expenses. }	
160	Providing 10% for profit. }	
161	100% - 20% = 80%. }	
162	Multiply \$82.65 by 100 and divide the result by 80 for the price to sell, in order to provide 10% for selling expenses, and make 10% profit	\$103.31
163	Divide \$103.31 by 105 yards for the price to sell per yard	\$.98½

164 How to Estimate the Cost to Produce

165 After the material required to make a given length of warp has been computed, and the filling required to weave the cloth is known, figure the cost of making the goods as shown in the illustration, Reference No. 193.

166 Reference No. 194. The cost of the material should include all expenditures made for the material, excepting labor.

167 Reference No. 195. The quantity of raw silk required for the warp should be charged at the purchase price of the grade of silk to be used.

168 Reference No. 196. The cost of throw-
169 ing, the raw silk required for warp, should

be charged at the actual cost of throwing the grade of silk to be used.

- 170 Reference No. 197. The cost of dyeing, the weight of raw silk required for warp, should be charged at the cost shown by the dyer's invoice.
- 171 Reference No. 198. The quantity of raw silk required for the filling should be charged at the purchase price of the grade of silk to be used.
- 172 Reference No. 199. The cost of throwing, the raw silk required for filling, should be charged at the actual cost of throwing the grade of silk to be used.
- 173 Reference No. 200. The cost of dyeing, the weight of raw silk required for filling, should be charged at the cost shown by the dyer's invoice.
- 174 If yarn and schappe are used for warp or filling, the cost of each required, and the cost of dyeing each, should be shown separately.
- 175 Reference No. 201. The cost of material entered here should include the entire cost of the material required.
- 176 Reference No. 202. In figuring the cost for labor, use the rates shown by past experience. These rates should be taken from the statistical record. Reference No. 220.

- 177 Reference No. 203. Figure the cost of winding the dyed weight of the organzine or material required for warp, at the rate of winding that grade of material.
- 178 Reference No. 204. Figure the cost of winding the dyed weight of the tram, or material required for filling, at the rate of winding and quilling that grade of material.
- 179 If yarn and schappe are used, the cost of winding and quilling, or preparing it for use as filling, should be shown separately.
- 180 Reference No. 205. Figure the cost of warping the length and ends of warp upon the basis used in figuring the warping on Exhibit B.
- 181 Reference No. 206. Figure the cost of twisting the warp on the loom upon the basis used in figuring the twisting on Exhibit C.
- 182 Reference No. 207. Figure the cost of weaving the estimated yardage off the loom at the rate to be paid plus the percentage required for nonproductive labor in the weave room.
- 183 Reference No. 208. Figure the cost of picking the estimated yardage off the loom at the estimated cost of picking the grade of goods.

- 184 Reference No. 209. Add the total of Reference Nos. 203, 204, 205, 206, 207, and 208 to obtain the total productive labor.
- 185 Reference No. 210. Figure the nonproductive labor on Reference No. 209, using the percentage shown by the pay roll summary, Reference No. 232.
- 186 Reference No. 212. Figure the provision for mill expenses on the basis used in compiling Exhibit C.
- 187 Reference No. 213. Add the total of Reference Nos. 201, 211, and 212, for the mill cost of the estimated yardage off the loom.
- 188 Reference No. 214. Estimate the finished yardage by considering the results obtained from similar grades.
- 189 Reference No. 214. Figure the cost of finishing the estimated finished yardage at the rate to be paid for finishing.
- 190 Reference No. 215. Add the total of Reference Nos. 213 and 214 for the cost of the goods finished.
- 191 Reference No. 218. Figure the price to sell as shown.
- 192 Reference No. 219. Divide the price to sell by the finished yardage for the average selling price per yard.

ILLUSTRATION

193	ESTIMATING THE COST TO PRODUCE		
194	Figuring the Cost of Material		
195	<i>Warp:</i> Silk required...40 lbs. @ \$3.50	\$140.00	
196	Throwing40 lbs. @ .60	24.00	
197	Dyeing.....40 lbs. @ .20	8.00	
198	<i>Filling:</i> Silk required ..35 lbs. @ 3.00	105.00	
199	Throwing35 lbs. @ .30	10.50	
200	Dyeing.....35 lbs. @ .90	<u>31.50</u>	
201	Cost of Material.....		\$319.00
202	Figuring the Cost of Labor		
203	Winding organzine40 lbs. @ \$.10	\$ 4.00	
204	Winding tram.....70 lbs. @ .25	17.50	
205	Warping, 500 yards	9.85	
206	Twisting, 8970 ends	2.37	
207	Weaving, 478 yards	@ .10	47.80
208	Picking, 478 yards	@ .01	<u>4.78</u>
209	Total productive labor	86.30	
210	Nonproductive labor, 20%	<u>17.26</u>	
211	Cost of Labor		\$103.56
212	Provision for mill exp. (40% of labor) ..		<u>41.42</u>
213	Mill cost (478 yards off loom)		\$463.98
214	Estimated 478 yds. will finish 482 yards		
	Cost of finishing 482 yards . @ \$.08		<u>38.56</u>
215	Cost of 482 yards finished		\$502.54
216	Provision for selling expenses, 10% } 217 Provision for profit, 10% }		
218	Price to sell ($\$502.54 \times 100 \div 80 =$) }		\$628.17
219	Price to sell, average per yard		\$ 1.30

V. PAY ROLL

220 Analysis of Pay Roll

The pay rolls must be analyzed according to the departments of manufacture, and a record kept of the production of each classification. This can be accomplished by grouping the operatives' names upon the pay-roll book, according to the classifications occupying their time, and keeping a record (in the

221 department) of the shifts made. Adjust the total of each department pay roll by deducting the amount chargeable to other classifications, and adding the wages for operatives shifted to the classification. The following summary of the pay roll for the quarter will show the classifications.

222	SUMMARY OF PAY ROLL	
223	Winding Organzine	\$ 831.22
224	Winding Tram	\$1667.33
225	Quilling Tram.....	1705.48
		3372.81
226	Warping	873.95
227	Twisting	750.81
228	Weaving, Productive.....	\$8859.85
229	Weaving, Nonproductive	1184.32
		10044.17
230	Picking	1497.08
		\$17370.04
231	Total	\$17370.04
232	Nonproductive, 20%	3457.19
		\$20827.23
233	Total of pay rolls	\$20827.23

234 Winding and Quilling

A record must be kept of the silk delivered to the winders, using the dyed weight. The cost of winding is based upon this record, which gives a questionable rate from week to week, but is accurate for the whole period when the inventories are considered.

235 If piece rates are paid for winding, it is unnecessary to keep this record, for the quantities can be proven with the general control.

236 Warping, Piece Rates

237 Where warpers are paid for piece work the rates must be increased to provide for the nonproductive labor and a charge must be made for beaming.

238 When warpers are day workers, a record must be kept of the time spent warping and beaming the warps for each quality-pattern-width. The record for each warper may be entered in a book; or a record may be kept of all the warpers showing the time occupied on each quality-pattern-width.

239 The warp room summary must show the number of hours spent on each quality-pattern-width. Divide the total wages of the warping department, by the total pro-

ductive hours; for the rate per hour for that quarter; and multiply it by the hours spent on each quality-pattern-width for the cost of warping each. To get the rate for 100 yards, divide the cost of twisting each line by the hundreds of yards of each warp made.

240 Twisting

241 If the twisters are paid piece rates, smashes should be charged to nonproductive. The piece work rates for the quarter should be increased by a percentage to provide for the nonproductive labor.

242 If the twisters are paid day wages, a record must be kept of the time occupied twisting each quality-pattern-width. The total pay roll of the twisters should be divided by the productive hours of the quarter, to

243 obtain the rate per hour for twisting. Multiply the rate by the hours spent on each line for the cost of twisting. To obtain the rate for 100 yards of each line, divide the wages by the hundreds of yards of each line actually twisted on the looms during the quarter.

244 Weaving

245 If piece rates are paid for weaving, the rates of each line must be increased by a

percentage to provide for the weaving non-productive labor.

246 If the weavers are paid part piece work rates and a few day workers, figure the wages of the day workers at the regular piece rates and add the excess to the non-productive labor.

247 If the weavers are day workers a record must be kept of the wages expended for weaving each quality-pattern-width. The total productive wages of each should be increased by a percentage for non-productive labor in the weaving room.

248 Picking

249 If the pickers are paid day wages, a record should be kept of the time occupied picking each line, in order to determine the rate for each.

VI. INVENTORIES

250 Inventory of Material

251 The inventory of material should be separated into three divisions: (a) Raw material; (b) Goods on the looms; and (c) Goods in the finishing department.

252 Inventory of Raw Material

253 The inventory of raw material should include all the raw silk, yarn, etc., in bales and cases; silk at the throwsters; stock at the dyers; in the store rooms, and in skeins, on spools, quills, cops, and frames, in all departments.

254 In compiling this inventory, the value of each lot should be analyzed to show the cost of the raw stock, the cost of throwing, the cost of dyeing, and the cost of winding.

255 When preparing the inventory of raw material, group the lots according to the following:

256 *Silk in Bales:* Figure the cost of raw silk.

257 *Silk at Throwsters:* Figure the cost of the silk.

258 *Silk at Dyers:* Figure the cost of the silk, and throwing.

- 259 *Yarn at Dyers:* Figure the cost of the yarn.
- 260 *Silk on Spools:* Figure the cost of the raw silk, throwing, dyeing, and winding.
- 261 *Tram on Quills:* Figure the cost of the raw silk, throwing, dyeing, winding, and quilling.
- 262 *Yarn on Spools:* Figure the cost of yarn, dyeing, and winding.
- 263 *Yarn on Quills:* Figure the cost of yarn, dyeing, winding, and quilling.

264 Inventory of Goods on the Looms

- 265 The inventory of goods on the looms should include the value of the warps on the looms, the prorated cost of twisting the balance of warps on the looms, the value of the filling required to weave the yardage woven on the looms, the cost of throwing tram included in the filling, the cost of dyeing the filling, the cost of winding the filling, and a percentage for nonproductive labor. The total of the above should be the value of the goods on the looms.

266 Figuring Inventory of Goods on Looms

To figure the value of the goods on the looms, take the total yards of warp still on the looms, Exhibit A, Item 24, and the total yards woven on the looms, Exhibit A, No. 25, of each fabric. Make a summary of warps on the looms (at the time of taking

the inventory), on the form Exhibit C, and in the same manner as shown on Exhibit C.

- 267 Column No. 1. List the fabrics the same as if the goods were completed.
- 268 Column No. 2. In this column put the total yards of each fabric woven on the looms.
- 269 Column No. 3. In this column enter the total yards of each kind of warp still on the looms, and figure the value of the warps (5) at the rates taken from Exhibit B.
- 270 Column No. 7. In this column enter the prorated cost of twisting, the balance of the warps on the looms.
- 271 Column No. 8. In this column enter the filling required to weave the yardage woven on the looms. (Column No. 2.)
- 272 Column No. 12. In this column enter the cost of throwing tram entered as being used in column No. 9.
- 273 Column No. 13. In this column enter the cost of dyeing the filling entered as having been used in column No. 9.
- 274 Column No. 14. In this column enter the cost of winding the filling entered as having been used in column No. 9.
- 275 Column No. 17. In this column enter the percentage that should be provided for nonproductive labor for totals Nos. 30 and 35; twisting and winding.

276 Column No. 19. In this column enter the total value of the goods, which will be the sum of the amounts entered in columns Nos. 6, 7, 11, 12, 13, 14, and 17.

277 The grand total No. 40 should be the total value of the goods on the looms at the time of taking the inventory.

278 Inventory of Finishing Departments

279 The inventory of the finishing departments is not absolutely necessary in order to figure the costs. If it is convenient to take an inventory of this department, it should be done.

280 The cost of picking the goods not picked will be a deduction from the picking wages, on Exhibit C. (The cost of weaving for the quarter.)

281 Taking Inventory of Raw Material

282 A convenient method of taking the inventory of the raw material is to print slips calling for the following information:

283 (a) Date of inventory,

284 (b) Number of material,

285 (c) Descriptions of material,

286 (d) How dyed,

287 (e) Dyed weight,

288 (f) Raw weight, and

289 (g) How prepared (Bales, skeins, spools, quills, etc.).

290 These slips should be made up in pads and during the days prior to inventory taking, the employees weighing the material should put slips upon all material, so that when the time comes for taking the inventory, everything in the mill will be marked. At the time appointed, each foreman should collect the slips in his department, and the inventory can be made up from the slips. The slips should be sorted according to classifications before listing.

291 Taking Inventory of Goods on Looms

292 A convenient method of taking the inventory of the goods on the looms, is to print slips calling for the following information:

- 293** (a) Date of inventory,
- 294** (b) Fabric on loom,
- 295** (c) Quality-pattern-width,
- 296** (d) Loom number,
- 297** (e) Warp number,
- 298** (f) Cuts made,
- 299** (g) Yardage of cuts,
- 300** (h) Take up,
- 301** (i) Length of warp,
- 302** (j) Balance of warp on loom, and
- 303** (k) Yards woven on the loom.

304 These slips should be executed by the weavers, just before closing, and they should

be left on the looms. The taking the inventory would mean collecting the slips and verifying the slips, by comparing them with the warp records.

305 Summary of Inventory

306 When the inventory is completed a summary should be made like the following:

307	INVENTORY, JANUARY 1, 1900	
308	<i>Raw Material:</i> Organ., 10701 lbs.	\$37453.50
309	Tram, 3210 lbs. .	9630.00
310	Yarn, 8715 lbs. .	3486.00
311	Throwing	963.00
312	Dyeing	6660.37
313	Winding	51.83
314	Nonpro. labor. . .	10.32
315	Total	<u>\$58255.02</u>
316	<i>Goods on Looms:</i> Warps Ref. No. 107	\$ 1337.18
317	Filling	311.52
318	Throwing	27.61
319	Dyeing	69.10
320	Wind'g & quill'g.	35.14
321	Twisting	13.95
322	Nonpro. labor. . .	9.28
323	Total	<u>\$ 1803.78</u>
324	Total Material and Labor	<u>\$60058.80</u>
325	<i>Finishing Departments:</i> Picking Rm.	\$ 3605.11
326	Finishers ..	4999.70
327	Total	<u>\$ 8604.81</u>
328	Total Inventory of Mill	<u>\$68663.61</u>

VII. RECORDS

329 Finished Goods

330 If the finished yardage is not compiled on the warp record, a record of the finished yardage should be kept in some form in order to determine the percentage of increase or decrease on the finished goods. The following record is convenient, when a sheet is used for each quality-pattern-width.

331 FINISHED GOODS BOOK

332 900 - 115 - 36"

333	Piece Numbers	Finished Yards	Mill Cut No.	Yards Off Loom
334	Brought	—	—	—
	Forward	5846	—	5792
335	17612	51	4127	52
336	17613	53	4386	54
337	17614	50	4092	51
338	17801	52	4095	53
339	17805	51	4788	52
340		6103		6054

341 Finishing

When the goods are finished, the finishing department should be operated as a separate institution, and the cost per yard

determined according to the conditions and requirements of the business.

342 Purchase Journal

Arrange the purchase journal so that it will provide columns for the following records of material purchased:

- 343 (a) Organzine, Weight.
- 344 (b) Organzine, Value.
- 345 (c) Tram, Weight.
- 346 (d) Tram, Value.
- 347 (e) Yarn, Weight.
- 348 (f) Yarn, Value.
- 349 (h) Schappe, Weight.
- 350 (i) Schappe, Value.
- 351 (j) Throwing Organzine, Weight.
- 352 (k) Throwing Organzine, Cost.
- 353 (l) Throwing Tram, Weight.
- 354 (m) Throwing Tram, Cost.
- 355 (n) Dyeing Organzine, Weight.
- 356 (o) Dyeing Organzine, Cost.
- 357 (p) Dyeing Tram, Weight.
- 358 (q) Dyeing Tram, Cost.
- 359 (r) Dyeing Yarn, Weight.
- 360 (s) Dyeing Yarn, Cost.
- 361 (t) Piece Dyeing.

362 The best way to accomplish this is to have a material column upon the old purchase

journal, and keep a sub-analysis book for the material, with the columns shown as above.

363 General Ledger

364 The general ledger should have the accounts planned so that the statement of the mill, for the quarter, can be made by simply arranging the balances of the accounts, entered on the trial balance. The final statement of the mill should be prepared like the illustration shown, Reference No. 369.

366 To determine the percentage of the selling expenses to the sales, divide the expenses, Reference No. 385, by the sales, Reference No. 387.

367 If the distribution of mill expenses is to be based upon the labor cost, divide the mill expenses, Reference No. 375, by the labor, Reference No. 374, to determine the percentage to be added for mill expenses.

368 If the distribution of mill expenses is to be based upon the cost of labor and material, divide the mill expenses by the difference between the cost of the production, Reference No. 380, and the mill expenses, Reference No. 375, to determine the

percentage to be added to the total cost for mill expenses.

369 STATEMENT MADE FROM LEDGER ACCOUNTS	
370	Mill Inventory, January 1, 1900..... \$ 68663.61
371	Purchase of Material 58401.22
372	Throwing Account 9411.80
373	Dyeing Account (Not Piece Dyeing)..... 5892.50
374	Pay Roll for the quarter..... 20827.23
375	Mill Expenses 14228.80
376	Total \$177425.16
377	Mill Inventory April 1, 1900 68337.58
378	Cost of Production \$109087.58
379	Finishing Account (Includes Piece Dyeing).... 8401.30
380	Total Mill Cost..... \$117488.88
381	Inventory of Finished Goods, January 1 201807.60
382	Total \$319296.48
383	Inventory of Finished Goods, April 1 180742.30
384	Cost of Sales..... \$138554.18
385	Selling Expenses 13682.71
386	Profit for the quarter..... 27932.85
387	Net Sales for the quarter \$180169.74

388 Weights on General Ledger

The general ledger accounts should show the weights of silk, yarn, and schappe; and the weights of throwing and dyeing. It will facilitate matters when you desire to prove the cost records, and also provide a control of the material used.

389 Final Summary

If a final summary is made of the results, the various classifications can be verified in detail. To make this summary, add to the analysis of the inventory at the beginning, the purchases of each classification, the analysis of the pay roll for the quarter, and the total expenses. Deduct the analysis of the cost of making the warps from the items of the classifications. Add the total cost of warps to the inventory of warps at the beginning and deduct the value of warps used. Deduct the items of the analysis of the cost of weaving from the various classifications, and the balance of each should be the inventory at the end of the period. (For illustration, see Reference Nos. 414 and 418.)

390

FINAL SUMMARY OF MANUFACTURING ACCOUNT

391	Inventory January 1	Purchases Wages and Expenses	Cost of Making Warps Exhibit B	Cost of Weaving Exhibit C	Inventory April 1
392 Organzine ..	37,453.50	27,657.16	28,295.00	—	36,815.66
393 Tram	9,940.52	30,744.06	—	30,273.95	10,410.63
394 Yarn	3,486.00	—	—	—	3,486.00
395 Throwing Organzine ..	566.31	5,001.70	4,848.00	—	720.01
396 Throwing Tram	424.30	4,410.10	—	2,731.80	2,102.60
397 Dyeing Organzine ..	1,873.95	2,100.05	2,012.50	—	1,961.50
398 Dyeing Tram	4,855.52	3,792.45	—	6,537.60	2,110.37
399 Twisting ...	13.95	750.81	—	746.49	18.27
400 Winding Organzine ..	51.83	831.22	646.40	—	236.65
401 Winding Tram	35.14	3,372.81	—	3,358.80	49.15
402 Warps	1,338.18	—	—	36,539.59	1,778.51
403 Warping ...	—	873.95	873.95	—	—
404 Weaving ...	—	10,044.17	—	10,044.17	—
405 Picking ...	—	1,497.08	—	1,497.08	—
406 Nonproduc- tive	19.60	3,457.19	304.07	3,129.30	43.42
407 Mill Expense	—	14,228.80	—	14,228.80	—
408 Totals ...	60,058.80	108,761.55		109,087.58	59,732.77
		(415)		(417)	(418)
409 Charged warps			36,979.92		
			(416)		
410 Inventory, January 1	60,058.80				
411 Purchases, etc. See Reference No. 415		108,761.55			
412 Total		168,820.35			
413 Cost of Product. See Reference No. 417		109,087.58			
414 Difference and Inv't'y Apr. 1. See Ref. No. 418				59,732.77	

419 Raw Silk

420 All calculations should be based upon raw silk. This does not mean that records should not be kept of dyed weights. The dyed weight is very essential in keeping a proper control upon the consumption.

421 If it is not possible to keep a record of the silk prepared and used for each line, the amount required can be used in figuring the cost. If the amount required does not equal the consumption shown by the ledger account, it must be increased or decreased proportionately, in order to make it equal the amount of raw silk actually used.

422 Yarn

The quantity of yarn used is generally based upon the amount computed to be required to produce the cloth. If the quantity figured on the cost sheets exceeds the quantity actually consumed, the quantity charged against each grade of cloth must be reduced proportionately.

423 Raw Silk Sent to Throwsters

Letters ordering silk to the throwster can be arranged so that the order will be executed in duplicate, and the copy put in a

binder, for a record of the silk at the throwsters; until the throwster's delivery is checked off, when the copies of the letters can be removed from the binder and filed permanently.

424 Silk at Dyers

Letters ordering silk dyeing can be arranged so that the order will be executed in duplicate, and a copy filed until the dyer's delivery is reported.

425 Stock Cards

Stock cards should be kept for material. There should be a card for each lot, and the record of deliveries should show the disposition of the material, in a manner that can be checked up with the next succeeding record of the material.

426 Silk Used for Warps

A record can be made of the raw silk numbers on the warp ticket, when the warp is made. This will facilitate matters when it is desirable to check up a particular lot of silk.

427 Warp Blanket

Where the employee is paid by the piece, a warp blanket can be used. It is per-

forated and contains a loom ticket, warpers' ticket, beamers' ticket, and tickets for the cuts. The ticket for each cut has three parts: (1) weavers' ticket; (2) pickers' ticket; and (3) piece ticket. An arrangement of this character insures correct records because the numbers are printed upon the tickets.

428 Loom Book

A convenient method of keeping a record of the cuts is to have a weave book on each loom, and enter the cuts in the loom book after inspection; then return the book to the loom. When the last cut is made the total yards can be footed and entered upon the warp records.

429 Cut Ticket

It is sometimes convenient to combine the cut ticket, pickers' ticket, and piece ticket. Printing the numbers on the tickets insures against errors.

430 Operatives' Pay Book

When operatives are paid piece rates, each operative should have a pay book, and the piece ticket should be entered in

it. The sum of the entries should be the pay of the operative.

431 Verifying Piece Work

When departments are paid by piece work, the tickets should be sent to the office and entered in a record kept of the work in each department. When this is done the total, entered in the book for the department, should equal the wages paid for the productive labor in the department.

432 Average the Labor Costs

When day wages are paid in operating departments, the average labor cost of each process, for each pay, should be made a matter of record. If this is done, the record of past performances will be an incentive to improvement, and also show what is possible under favorable conditions. In which case it is advisable to adopt every means of promoting the favorable conditions. In making this record, the book should be arranged so that each average is compared with the average of previous years. A convenient method is to provide a page for each process, with fifty-two lines on the page, and two columns for each year. In

the first column, enter the quantity, and in the next column, enter the average, for one week.

433 Jacquard Looms

Two accounts should be kept on the ledger for harness and designs, if Jacquards are used.

434 (a) Jacquard harness and designs,

435 (b) Plain harness and designs.

436 In which case a special column should be provided on the form Exhibit C, for "Harness and Designs," and a special distribution made. The cost of Jacquards should be distributed over the fabrics made with Jacquards and the cost of plain harness distributed over the fabrics made with plain harness.

437 Piece Dyeing

Piece dyeing should not be confused with the other dyeing, because it is part of the cost of finishing and should be included in finishing account or kept in a separate account on the ledger.

438 Dyeing

When dyeing is done, the dye-house must be operated as a separate institution. The

dyeing should be classified as (a) piece dyeing, and (b) skein dyeing. A slip should be prepared so that the dyer can make a record of the dyestuffs used by kettles. The form should provide for a record of the material to be dyed and the dyestuffs used. The reports for kettles can be grouped by colors, styles, or in any manner that is desired, and the cost figured on a basis of pounds dyed.

VIII. PROVING THE RESULTS

Proof of Accuracy

439 In order to prove the charges made for material and wages on the summary of the cost of making the warps, Exhibit B, and the summary of the cost of weaving, Exhibit C, consider the inventories for the beginning and end of the period, and reconcile the expenditures for the period with the charges made to the cost sheets.

440 Classification of Materials

The material can be classified as organzine, tram, yarn, and schappe, or as different grades of each, without making any more work, and each can be proven by considering the inventories and the purchases. It is advisable to classify the material according to grades and prove out each; then any difference can be adjusted before closing the summary of warps, Exhibit B, and the summary of weaving, Exhibit C.

441	THROWING	
442	Inventory Throwing, Reference No. 311	\$963.00
443	Inventory T. Tram, Reference No. 318.....	27.61
444	Throwing invoices as per Voucher Record, Reference No. 372	9411.80
445	Total	<u>\$10402.41</u>

SILK MILL COSTS

55

	Brought forward	\$10402.41
446	Throwing Organ., Exhibit B, No. 22	\$4848.00
447	Throwing Tram, Exhibit C, No. 33 ..	<u>2731.80</u>
448	Total charged to cost sheets	7579.80
449	Balance should be inventory at closing	<u>\$2822.61</u>

450 DYEING

451	Inventory, Raw Material, January 1, Reference No. 312	\$6660.37
452	Inventory, on looms, January 1, Reference No. 319.....	69.10
453	Dyeing invoices as per voucher register, Refer- ence No. 373	<u>5892.50</u>
454	Total	\$12621.97
455	Dyeing Organ., Exhibit B, No. 23....	\$2012.50
456	Dyeing Filling, Exhibit C, No. 34 ...	<u>6537.60</u>
457	Total charged to cost sheets	8550.10
458	Balance should be inventory at closing	<u>\$4071.87</u>

459 WINDING ORGANZINE

460	Inventory January 1, Reference No. 313	\$51.83
461	Pay roll for period, Reference No. 223	<u>831.22</u>
462	Total	\$883.05
463	Deduct, charges to cost sheet, see Exhibit B, No. 24	<u>646.40</u>
464	Balance should be inventory at closing	<u>\$236.65</u>

465 WINDING FILLING

466	Inventory January 1, Reference No. 320	\$35.14
467	Pay roll for period, Reference No. 225	<u>3372.81</u>
468	Total	\$3407.95
469	Deduct, charges to cost sheet, see Exhibit C, No. 35	<u>3358.80</u>
470	Balance should be inventory at closing	<u>\$49.15</u>

471	TWISTING	
472	Inventory, January 1, Reference No. 321	\$13.95
473	Pay roll for period, Reference No. 227	<u>750.81</u>
474	Total	<u>\$764.76</u>
475	Deduct, charges to cost sheets, see Exhibit C, No. 30	<u>746.49</u>
476	Balance should be inventory at closing	<u>\$18.27</u>

477 WARPING WAGES

478 The warping wages in the summary of the pay roll for the quarter, Reference No. 226, should equal the warping charged against Exhibit B, No. 25.

479 WEAVING WAGES

480 The weaving wages on the summary of the pay roll for the quarter, Reference No. 228, should equal the weaving charged against Exhibit C, No. 36.

FINAL PROOF

481 The total of the summary of weaving, Exhibit C, No. 40, should equal the total mill cost shown on the statement made from the ledger, Reference No. 378.

IX. THROWING

482 Throwing Mill

483 The throwing mill must in all cases be entirely separated from the weaving mill, and operated as a separate institution. This is a very simple proposition when the expense of power and rent are distributed upon the basis described, Reference Nos. 530 and 541.

484 In this illustration there are only two classifications: Organzine and Tram, but in actual practise the silk is classified according to the different grades of each.

485 The cost system for the throwing mill consists mainly of arranging the pay rolls, and keeping a record of the weights according to the classifications of the production. As far as possible, the wages of the various classifications, in the various departments, are separated so that the cost of each classification can be determined. The plan is not to compile the cost of each particular lot of silk, but to figure the cost of each operation or group of operations, where the latter is advisable.

486 The idea is to figure the labor cost of each classification according to the entire

production, of that classification for the quarter, and thus afford a means of figuring the cost of the entire production of each classification, for the quarter.

487 The cost for a pay roll may be inaccurate, but when the inventories are considered, the costs will be adjusted by the law of averages.

488 Preparing the Pay Rolls

The pay rolls should be prepared by grouping the employees according to the classifications of the work occupying their time. When the foreman shifts an operative from one classification to another, he should make a record of the shift. The shifts are reported to the office, and when the pay roll is made up for that period, the total pay roll for each classification is determined by footing the operatives grouped under the classification. Allowances should then be made for the shifts. The summary of the pay roll should then be made, and entered in the statistical record, Reference Nos. 507, 508, and 509.

489 The pay of employees operating frames of different classifications should be divided among the classifications. If half the frames

are one classification and the other half another, half the pay should be charged against each.

490 Statistical Record

491 The statistical record should provide columns for the following:

492 (a) Spinning Organzine,

493 (b) Spinning Tram,

494 (c) Doubling Organzine,

495 (d) Doubling Tram,

496 (e) Reel Mills, Organzine,

497 (f) Reel Mills, Tram,

498 (g) Power Reels, Organzine,

499 (h) Power Reels, Tram,

500 (i) Lacing Organ and Tram,

501 (j) Special Operations (Winding on tubes, etc.),

502 (k) Nonproductive Labor,

503 (l) Production of Organzine,

504 (m) Production of Tram.

505 This classification is simply shown to illustrate the plan of operation; you must make the classifications suitable to your mill.

506 Production

507 The weights of the production should be computed for the same period as the pay roll, and entered on the statistical record.

- 508 If desired, the cost per pound for each classification can be figured for each pay roll and entered upon the statistical record. While the rates for each week will not be accurate, if the total production is considered, by considering the inventories, the averages for the quarter are made accurate.
- 509 At the end of each quarter the summaries of the pay rolls entered in the statistical record are footed and a summary made for the quarter. This summary is made on Exhibit D, and the cost of each classification is computed.

510 Fractional Pay Rolls

At the beginning and end of the quarter, the pay roll for the fractional part of the week should be prepared. The accrued pay roll for the fractional part of the week at the end of the expiring quarter should be compiled, and entered upon the statistical record with the pay rolls for the quarter. The entire pay roll for the first pay of the next quarter can then be compiled for the new quarter, and the fractional pay roll for the expired quarter deducted therefrom. The balance should be applied against the new quarter.

511 Raw Silk

The records of raw silk on the general books should be made in pounds and money value. The inventory of the raw silk at the beginning of the period should be considered; to it should be added the purchases made during the quarter and from the sum, deduct the inventory at the end of the period.

512 Waste

A record of waste should be made, so that the waste of each class of silk will be known. The fact that a record is made of the waste, of each classification, will make the employees more careful and tend to reduce the loss.

513 Lot Record

A record should be made of each lot of silk, as it is passed in process. A convenient method is to provide a loose leaf book, and use a sheet for each lot. The heading of the sheet should show the details of the original lot. Two columns should be used for the numbers and weights of bales, and other columns provided, one for each bale. As the reports for bundles are received, the weight of each bundle should be entered in the column for the bale from which it was

taken. A final summary should be made showing the total pounds thrown from each bale.

- 514 When the lot is completed the sheet should be removed from the current binder and filed in a permanent binder for future reference.
- 515 Taking the inventory will simply require a summary being made from the sheets in the current binder, and checking up the summary.

516 Expense Burden

The expenses of the throwing mill should be provided for, by adding to the labor cost a percentage for expenses. The percentage can be based upon the pounds of production or the labor cost of each class of silk. The following items should be provided for under this heading:

- 517 (a) Power and heat. (See Reference No. 530.)
- 518 (b) Light. (See Reference No. 539.)
- 519 (c) Rent. (See Reference No. 540.)
- 520 (d) Mill Expenses. (See Reference No. 542.)
- 521 (e) Depreciation. (See Reference No. 544.)

522 Power

A power account should be kept in the general ledger in order to determine the actual cost of operating the power plant, and all expenditures for account of power and transmission should be charged against this account. It should be charged with the following in a steam plant:

- 523 (a) Coal, Wood, and Fuel Oil or Gas,
- 524 (b) Lubricants for power plant,
- 525 (c) Packing,
- 526 (d) Supplies for engine room,
- 527 (e) Depreciation on power plant,
- 528 (f) Proportion of rent,
- 529 (g) Wages of power plant.

530 Distribution of Power Expense

The cost of power shown by the general ledger account should be distributed according to the required horse-power of the machinery in each department. If light is generated from the same power, the proportion required to operate the generators should be charged to the light account. The proportion chargeable to light should be based upon the hours the light plant was operated, during the quarter.

531

FORMULA

532 a = Light hours.533 b = Operating hours of plant.534 c = Horse-power required for dynamo.535 d = Power generated by power plant.536 e = Cost of power plant.537 f = Power expense chargeable to light.

538
$$\frac{a}{b} \times \frac{c}{d} \times e = f$$

539 Light

A light account should be opened upon the general ledger, and in addition to its proportion of power expenses, all expenses of lighting, repairs, and maintenance of lamps, wiring, etc., should be charged against the light account. The expense of light should be distributed according to the lamps in each department.

540 Rent

Whether rent is paid or not, a rent account should be kept on the general ledger. If rent is paid, the amount paid should be distributed; if the property is a part of the business, the expense of rent should be computed. To compute the expense of rent,

charge the rent account with interest at about five per cent. of the value of the plant, insurance upon the plant, depreciation on buildings, repairs, and renewals essential to their upkeep, and taxes.

541 Distribution of Rent

The rent expense should be distributed among the departments according to the floor space occupied by each department. This charge is very important and very often upsets the calculations made without considering rent.

542 Mill Expenses and Supplies

There should be two accounts for all mill expenses and supplies: (1) An account for all expenses of a general character, and (2) an account for special items such as cops, tubes, etc., for special lots, not applying against the general throwing.

544 Depreciation on Machinery

This account should provide an amount sufficient to cover the depreciation on the machinery. It should be reduced by the repairs and replacements that were expended to offset the depreciation. The

depreciation on the machinery in each department can be determined by making schedules of the machinery in each department in a book used only for that purpose. Every plant should keep a schedule of the machinery and preserve all invoices for purchases of machinery, contracts for buildings, improvements, etc., in order to have some basis upon which an insurance claim can be made. This is imperative and of vital importance. Do not delay the matter, if not provided, because few plants obtain their proper insurance when they neglect to make this provision.

Exhibit D, Cost of Throwing


In compiling the statement of the cost of throwing on Exhibit D, the expenditures of the throwing mill should all be grouped under five classifications:

- (1) Productive labor,
- (2) Nonproductive labor,
- (3) Power,
- (4) Rent, and
- (5) General Expenses.

Exhibit D is provided with a column for all charges, and columns for the rates and totals of organzine and tram. If desired, the

silk can be classified according to the different grades of each, and when so classified, a column similar to numbers 6 and 7 should be provided for each classification. The total production in pounds should be entered at (1); the production of organzine in pounds should be entered at (2); the production of tram in pounds should be entered at (3); the analysis of the pay rolls for the quarter should be entered in column (5) opposite the departmental classifications (13) to (21); the total (22) should be the total productive labor for the quarter; the pay roll for spinning organzine during the quarter was \$436.98; this amount was divided by 20,506 pounds (production of organzine) for the rate per pound for spinning organzine, \$.02131 — the rate should be entered in column (9), and the wages of the department should be entered in column (10). The same procedure applies to departments (14), (15), (16), (17), (18), (19), and (20). The pay roll of the lacing department (21) is chargeable to organzine and tram. It should be distributed against both on a per pound basis. The wages for the quarter, \$289.93, were divided by the sum of 20,506 pounds (production of organzine), and

COMPUTING THE COST OF THROWING. EXHIBIT D

	Production 	(1) 51,316 lbs.	(2) 20,506 lbs.	(3) 30,810 lbs.		
	(4) Departments	(5) Wages Paid	(6) Organzine		(7) Tram	
			(9) Rate per lb.	(10) Amount	(11) Rate per lb.	(12) Amount
(13) Spinning, Organ.	436.98	.02131	436.98	—	—	
(14) Spinning, Tram	539.79	—	—	.01752	539.79	
(15) Doubling, Organ.	398.84	.01945	398.84	—	—	
(16) Doubling, Tram	414.39	—	—	.01345	414.39	
(17) Reel Mills, Organ.	344.91	.01682	344.91	—	—	
(18) Reel Mills, Tram	434.42	—	—	.01410	434.42	
(19) Power Reels, Organ. ...	397.20	.01937	397.20	—	—	
(20) Power Reels, Tram ..	395.91	—	—	.01285	395.91	
(21) Lacing	289.93	.00565	115.86	.00565	174.07	
(22) Total Direct Labor ...	3652.37	.08260	1693.79	.06357	1958.58	
(23) Nonproductive, 50% ..	1826.04	.04130	846.90	.03178	979.14	
(24) Power	862.70	.02051	420.58	.01435	442.12	
(25) Rent	1150.53	.02765	566.99	.01894	583.54	
(26) General Expense	2978.96	.07434	1524.42	.04721	1454.54	
(27) Total Cost	10,470.60	.24640	5052.68	.17585	5417.92	
	(28)	(29)	(30)	(31)	(32)	

30,810 pounds (production of tram), for the rate per pound \$.00565. Multiply 20,506 pounds by \$.565 for the amount chargeable to organzine; and multiply 30,810 pounds by \$.00565 for the amount chargeable to tram; for lacing. The total labor (22) chargeable against organzine and tram should be increased by a percentage to provide for nonproductive labor (23). The power account (24) should be distributed between the departments on a basis of required power (Reference 530). The rent account (25) should be distributed between the departments on a basis of floor space (Reference 541). The item of general expense (26) must include every expenditure not provided for in numbers (1) to (4). It may be distributed upon a per pound basis, but the most satisfactory plan is to distribute it between the departments on the productive labor basis. It is imperative that the latter plan be used when commission winding, or tube and cone winding, are done. The rate for each item of expense is determined by dividing them by the production of the department for the quarter. The sum (29) of the items in column (9) should be the rate for throwing organ-

zine. The sum (30) of the items in column (10) should be the total of the expenditures chargeable to throwing organzine. The sum (31) of the items in column (11) should be the rate for throwing tram. The sum (32) of the items in column (12) should be the total of the expenditures chargeable to throwing tram. The total cost (28) should be the total expenditures for the quarter.

Accounting Practice

For further information on the subject of general accounting, and how to plan a general set of books, arrange the various accounts and rule the voucher register, the purchase journal, the general journal, and the cash book. (See *Accounting Practice*, by the same author, published by D. Appleton and Company, New York.)

Yarn and Cloth Calculations

No consideration has been given to this subject, because the matter has been treated very thoroughly in several other works. The writer recommends "Yarn and Cloth Calculations," by Thomas Yates, for sale by Lord and Nagle Company, of Boston, Massachusetts.

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