THE STATUS OF INVENTORY VALUATION
IN TEXAS COTTON MILLS, 1950

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THE STATUS OF INVENTORY VALUATION
IN TEXAS COTTON MILLS, 1950

THESIS

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By

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CHAPTER I

INTRODUCTION

Statement of the Problem

The problem is to determine the status of the methods of inventory valuation in Texas Cotton Mills. This study is also conducted to determine how much uniformity, if any, exists in this particular industry.

Selection of the Problem

The subject for this research study was selected because of the interest the writer has for the cotton textile industry, and because of the experience the writer has had working in a cotton textile mill for approximately three years. This subject was also selected because it should prove of some practical value to those people interested in the cotton textile industry, those interested in accounting for inventories, and those interested in management.

Delimitation of the Problem

This study has been limited to the cotton mills located in Texas. It has also been limited to the three major types of inventories, which are: Raw Materials, Goods in Process, and Finished Goods.
Sources of Data

The study was conducted by the use of a questionnaire, personal interviews, and library research. The questionnaire which was used to secure necessary data is in Appendix A. The writer visited four of the mills and secured answers to the questionnaire used in the study. In visiting these four mills, the writer obtained information concerning six mills, for at one mill were the cost records for three mills that made up a corporation. Questionnaires were mailed to eleven other mills. Answers were received from eight of these eleven mills.

The names of the mills used in this study, location, and types of cost accounting system used are presented in Table 1. None of the mills will be listed again by name. In a study of this type it is deemed necessary to withhold names of the mills for the protection of those mills which contributed information. Letters of the alphabet will be used to designate the mills used in this study.

It was found that seven of the mills use a process cost system; four, a standard cost system; and two, a job cost system.

Library reference material available at North Texas State College and Southern Methodist University was used to secure the needed information concerning the accounting procedures for inventories as recommended by leading writers in the field of accounting.
TABLE 1
LOCATION OF THIRTEEN COTTON TEXTILE MILLS IN TEXAS AND COST SYSTEM USED, 1950

<table>
<thead>
<tr>
<th>Name of Mill</th>
<th>Location</th>
<th>Cost System Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonham Cotton Mill</td>
<td>Bonham</td>
<td>Job Cost</td>
</tr>
<tr>
<td>Corsicana Cotton Mill</td>
<td>Corsicana</td>
<td>Process</td>
</tr>
<tr>
<td>Denison Cotton Mill Company</td>
<td>Denison</td>
<td>Job Cost</td>
</tr>
<tr>
<td>Gonzales Cotton Mill, Inc.</td>
<td>Gonzales</td>
<td>Process</td>
</tr>
<tr>
<td>Houston Cotton Mills, Inc.</td>
<td>Houston</td>
<td>Process</td>
</tr>
<tr>
<td>Itasca Cotton Manufacturing Co.</td>
<td>Itasca</td>
<td>Standard</td>
</tr>
<tr>
<td>Mexia Textile Mill</td>
<td>Mexia</td>
<td>Process</td>
</tr>
<tr>
<td>New Braunfels Textile Mill</td>
<td>New Braunfels</td>
<td>Standard</td>
</tr>
<tr>
<td>Postex Cotton Mill</td>
<td>Post</td>
<td>Standard</td>
</tr>
<tr>
<td>Sherman Manufacturing Co.</td>
<td>Sherman</td>
<td>Standard</td>
</tr>
<tr>
<td>Texas Textile Mill</td>
<td>Waco</td>
<td>Process</td>
</tr>
<tr>
<td>Texas Textile Mill</td>
<td>McKinney</td>
<td>Process</td>
</tr>
<tr>
<td>Texas Textile Mill</td>
<td>Dallas</td>
<td>Process</td>
</tr>
</tbody>
</table>

Method of Procedure

The questionnaire used in securing the data is arranged so that the data are given as nearly as possible in the order in which it is presented in this research paper. The statistical data are transferred to tables which are presented as the data are discussed.

The study is organized into five parts. The introductory chapter states the purpose of the study, the delimitations, source of material, the manner in which the study is presented, and the survey of related materials. The second chapter presents the methods used in the valuation of Raw Material Inventory. The third chapter is a presentation of the methods used in the valuation of Goods in Process.
Inventory. In the fourth chapter is given the methods used in the valuation of Finished Goods Inventory. The fifth and final chapter presents the summary and conclusions.

Survey of Related Materials

Various studies have been made of inventory valuations. Some have been based upon hypothetical assumptions, while a few have applied to information taken from actual business cases. In the survey of related materials little information was found in regard to inventory valuation in the cotton textile mills.

Arthur,¹ in an article showing the relation of inventory profits to the business cycle, selected a large sample of firms and estimated the amount of variation in their total reported income due to losses and gains recognized from changes in the values of the inventories held. Presumably these changes in values were calculated by taking the difference in the reported inventory values and the costs of replacing the stocks at the time of the inventory pricing. Table 2 has been constructed from his findings.

While a study of this nature is of value in attempting to determine the relation of specific elements of this income to the business cycle, it is not particularly helpful in showing the fluctuations for individual enterprises.

TABLE 2

INFLUENCE OF INVENTORY GAINS AND LOSSES ON THE REPORTED INCOME OF SELECTED ENTERPRISES, 1929-1935

<table>
<thead>
<tr>
<th>Year</th>
<th>Business Profits</th>
<th>Profits Adjusted for Inventory Gains and Losses</th>
<th>Net Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929</td>
<td>8,552</td>
<td>9,264</td>
<td>+712</td>
</tr>
<tr>
<td>1930</td>
<td>912</td>
<td>5,243</td>
<td>+4,331</td>
</tr>
<tr>
<td>1931</td>
<td>-3,713</td>
<td>-410</td>
<td>-3,308</td>
</tr>
<tr>
<td>1932</td>
<td>-6,193</td>
<td>-4,673</td>
<td>-1,520</td>
</tr>
<tr>
<td>1933</td>
<td>801</td>
<td>-3,321</td>
<td>-2,140</td>
</tr>
<tr>
<td>1934</td>
<td>1,257</td>
<td>-874</td>
<td>-2,431</td>
</tr>
<tr>
<td>1935</td>
<td>3,382</td>
<td>2,597</td>
<td>-785</td>
</tr>
</tbody>
</table>

Wilson\(^2\) presents an illustration showing the effect of valuing inventories at the lower of cost or market and last-in, first-out on the income reporting of an actual enterprise engaged in the processing of cotton. The figures for cost or market, whichever is lower, are those from the firm's books, while the last-in, first-out valuation was calculated.

Table 3 is formed from his data.

It is apparent at once from Table 3 that the use of last-in, first-out method did not level out profits for the firm during the period under survey, but on the contrary, yielded results with a much wider range in reported income. Furthermore, the tax payments over this period resulting from the use of last-in, first-out were greater than the

\(^2\)George A. Wilson, "Further Consideration of the Last-In, First-Out Basis of Inventory Valuation," N. A. C. A. Bulletin (September 1, 1939), 1-26.
payments assessed on the income reported by the lower of cost or market method.

### Table 3

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost or Market, whichever is lower (As shown by company's books):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1933</td>
<td>$52,400</td>
</tr>
<tr>
<td>1934</td>
<td>$66,900</td>
</tr>
<tr>
<td>1935</td>
<td>$38,200</td>
</tr>
<tr>
<td>1936</td>
<td>$126,700</td>
</tr>
<tr>
<td>1937</td>
<td>$31,500</td>
</tr>
<tr>
<td>1938</td>
<td>$56,900</td>
</tr>
</tbody>
</table>

**Total: $185,400**

<table>
<thead>
<tr>
<th>Year</th>
<th>Last-in, First-out (Calculated):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1933</td>
<td>$81,000</td>
</tr>
<tr>
<td>1934</td>
<td>$33,400</td>
</tr>
<tr>
<td>1935</td>
<td>$9,400</td>
</tr>
<tr>
<td>1936</td>
<td>$161,300</td>
</tr>
<tr>
<td>1937</td>
<td>$119,700</td>
</tr>
<tr>
<td>1938</td>
<td>$61,000</td>
</tr>
</tbody>
</table>

**Total: $98,200**

Madigan\(^3\) conducted a study that dealt with the inventories in the cotton textile industry. This was done for a

---

\(^3\) John J. Madigan, Managing Cloth Inventories in the Cotton Textile Industry, pp. 1-51.
marketing study in managing inventories. It was found in this study that mills in different parts of the South carry different amounts of inventories. Part of each period's production in most mills was used in building up warehouse inventories in certain lines of goods. The method used in the valuation of inventories was not discussed in his study.

Davis¹ presents illustrations showing the influence of first-in, first-out; cost or market, whichever is lower; last-in, first-out; average cost; and market in cotton inventory valuations. Davis used hypothetical figures and applied them to information given by Wilson in his study of cotton mills. A summary of the study as made by Davis is given in Table 4 and Table 5.

In the first-in, first-out method the inventory value was found by adding the most recent assumed purchases until the physical units were equal to the stocks unsold.

Cost or market, whichever is lower, was computed using first-in, first-out in order to approximate the cost figure. Market was applied to the entire amount of inventory and not to individual lots, or to purchases by months.

The average result was computed by finding the derived cost of goods made available for sale in the periods and multiplying this amount by the number of physical units in

¹ Albion R. Davis, "Further Comments on Last-in, First-out," N. A. C. A. Bulletin (February 1, 1940), 705.
### Table 4

COTTON INVENTORY VALUATIONS ASCERTAINED BY THE USE OF COMMON PRICING PROCEDURES

<table>
<thead>
<tr>
<th>Year</th>
<th>First-in, First-out</th>
<th>Last-in, Last-out</th>
<th>Average Cost</th>
<th>Cost or Market</th>
<th>Base Stock** (2,800,000 Units @ 10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1932</td>
<td>$357,000</td>
<td>$357,000</td>
<td>$357,000</td>
<td>$357,000</td>
<td>$403,800</td>
</tr>
<tr>
<td>1933</td>
<td>625,500</td>
<td>406,900</td>
<td>595,000</td>
<td>697,000</td>
<td>401,900</td>
</tr>
<tr>
<td>1934</td>
<td>793,200</td>
<td>365,900</td>
<td>674,500</td>
<td>819,200</td>
<td>382,000</td>
</tr>
<tr>
<td>1935</td>
<td>851,300</td>
<td>468,200</td>
<td>816,500</td>
<td>851,300</td>
<td>472,400</td>
</tr>
<tr>
<td>1936</td>
<td>692,500</td>
<td>275,900</td>
<td>660,000</td>
<td>692,500</td>
<td>280,000</td>
</tr>
<tr>
<td>1937</td>
<td>806,700</td>
<td>568,500</td>
<td>904,200</td>
<td>651,300</td>
<td>161,000</td>
</tr>
<tr>
<td>1938</td>
<td>589,500</td>
<td>485,100</td>
<td>701,200</td>
<td>589,500</td>
<td>385,800</td>
</tr>
</tbody>
</table>

* Decreases taken at latest acquisition prices of previous periods.
** Decreases and increases taken at latest acquisition prices.

### Table 5

NET PROFIT FIGURES RESULTING FROM THE USE OF DIFFERENT INVENTORY VALUATION METHODS

<table>
<thead>
<tr>
<th>Year</th>
<th>First-in, First-out</th>
<th>Last-in, First-out</th>
<th>Average Cost</th>
<th>Lower of Cost or Market</th>
<th>Base Stock** (2,800,000 Units at 10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1933</td>
<td>$339,300</td>
<td>$120,700</td>
<td>$308,300</td>
<td>$339,300</td>
<td>$168,900</td>
</tr>
<tr>
<td>1934</td>
<td>220,300</td>
<td>11,600</td>
<td>132,100</td>
<td>220,300</td>
<td>32,700</td>
</tr>
<tr>
<td>1935</td>
<td>23,900</td>
<td>20,300</td>
<td>60,000</td>
<td>23,900</td>
<td>8,100</td>
</tr>
<tr>
<td>1936</td>
<td>120,900</td>
<td>154,400</td>
<td>118,600</td>
<td>120,900</td>
<td>154,500</td>
</tr>
<tr>
<td>1937</td>
<td>158,500</td>
<td>20,000</td>
<td>28,500</td>
<td>313,900</td>
<td>91,700</td>
</tr>
<tr>
<td>1938</td>
<td>253,500</td>
<td>119,800</td>
<td>239,300</td>
<td>98,100</td>
<td>112,300</td>
</tr>
</tbody>
</table>

| Totals | $2,800 | $101,600 | $114,500 | $8,300 | $2,800 | $148,500 |

* Decreases taken at latest acquisition prices of previous periods.
** Decreases and increases taken at latest acquisition prices.
the final inventory over the number of units made available for sale.

In applying last-in, first-out the final inventories were valued at the individual valuations at the beginning of the period plus the earliest purchase of that period. When the final inventory contained fewer units than the beginning inventory, the earlier acquisitions in the beginning inventory were assumed to be those remaining in the closing inventory. Or what is the same thing, the latest additions to the previous beginning inventory were charged to cost of sales of the period in which the stocks were depleted.

The amount of normal stock for the application of the base-stock method was taken to be 2,800,000 pounds, the lowest figure to which the physical stocks were reduced during the periods involved. The excess of normal stock in inventories was priced at cost as determined by the first-in, first-out rule. Since it is sometimes advocated that the excess be valued at lower of cost or market, this method was also applied, but the results differed only by a small amount from those procured by the accepted cost method.

The application of market involved no assumptions other than those running through the entire procedure. The quantities on hand at the end of the year were valued at the computed price for December for those years.
CHAPTER II

VALUATION OF RAW MATERIAL INVENTORY

The variety of materials used in different manufacturing concerns and the conditions under which these are priced necessitates a constant repetition of the statement that there are many ways of doing the same thing. A cost accountant employed in a cotton textile mill must be familiar with as many of the different methods of doing things as possible and the possible conditions under which each may be advantageously applied.

The methods used in pricing perpetual inventories in cotton textile mills in Texas are as follows: (1) First-In, First-Out, (2) Moving Average, (3) Last-In, First-Out, (4) Weighted Average, and (5) Cost or Market, Whichever Is Lower.

Before going into a discussion of the various methods in valuing raw material inventory, it is deemed necessary to explain some of the accounting problems that arise in the pricing of these inventories. This explanation will be given so that a clearer picture of the situation that arises in pricing inventories can be seen by the reader.
Some problems closely related to the subject of inventories that are to be considered are: (1) the treatment of freight-in, (2) accounting for scrap, and (3) accounting for spoiled goods.

**Accounting for Freight-In**

According to Neuner freight-in paid by the receiver of goods may be treated in one of three ways:

(1) Immediately charged to the Stores Control and also to the respective inventory cards. (2) Set up a Freight-in account and allocated to the individual inventory cards. Subsequently the total is closed to the Stores Control. (3) Treated as a manufacturing expense, that is, it is not distributed to the Stores Control or the inventory cards.¹

If freight-in is charged immediately to the Stores Control by debiting stores in the voucher register, the total amount must be added proportionately to the perpetual inventory card affected. The total cost of goods plus freight is extended to the total amount column in the balance section. The addition of freight may result in the determination of unit prices of a fractional cent and result in additional clerical labor in the computation of the cost of material used. Therefore, many concerns find it more practical to treat freight-in as a manufacturing expense even though such treatment is not so accurate. Some concerns carry all freight-in charges to a Freight-in account. At the end of each month an entry is made closing this into Stores Control

account and distributing the amount on some equitable basis to the various perpetual inventory cards.

Nicherson\(^2\) in a recent article said that freight-in is another item which is really a part of the cost of raw material, but the difficulties of allocation frequently result in treating it as an item of manufacturing expense without direct allocation. With respect to bulky goods the freight often constitutes a considerable element in the cost. Here the charges can be definitely allocated to specific lots and this is usually done. Under such conditions care should be taken when determining the lower of cost or market at the close of a period so that the market value established shall take freight into consideration.

Accounting for Scrap

Scrap may be defined as salable material resulting from the primary manufacturing operation. Usually, if the scrap has little value, no entry is made for the quantity or value until it is sold. Because of the difficulty of valuation scrap is usually recorded in a memo entry as to quantity only.

Neuner mentions three possible methods for the accounting of scrap, as follows:

\(^2\)Clarence B. Nicherson, "Application of the Cost or Market Rule to a Woolen Company," The Control and Valuation of Inventories, p. 223.
(1) Credit the sales price to material cost of the job on which scrap originated. (2) Credit the sales price to manufacturing expense. (3) Credit the sales price as miscellaneous income. The most accurate and ideal method is to credit the material cost of the job where the scrap originated. But in most instances this method is not practical because the difficulty of segregating the amount of scrap occurring on the various jobs and the difficulty of valuation is too great.\(^3\)

As Neuner points out, the most desirable method of accounting for scrap is to credit the material cost of the job where the scrap originated. The second most desirable method, however, is to treat the value of scrap as a credit to manufacturing expense, thus reducing the cost of all the jobs passing through the department.

**Accounting for Spoiled Goods**

Spoiled goods are goods which in process of manufacture have developed some imperfection which cannot economically be corrected and thus the goods must be sold as seconds.

According to Neuner there are two ways to handle the accounting for spoiled goods. These are: "(1) May be charged to production order on which it occurred. (2) May be charged to manufacturing expense and spread over the cost of all jobs."\(^4\)

If manufacturing is done on a large scale and, due to the nature of the manufacturing process, spoilage is the

\(^3\)Neuner, op. cit., p. 127.

\(^4\)Ibid.
general rule but irregular in amount on the various jobs, the loss arising from the spoiled goods should be treated as a manufacturing expense and the total prorated over all the jobs by means of a manufacturing expense rate. In either case the spoiled goods are recorded on the books at the expected sales price.

Questions 21, 22, and 23 in the questionnaire used in this study deal with these three problems that must be considered in the study of inventories. In Table 6 is shown the various methods used by each mill in the accounting for the above three items.

Seven mills consider freight-in as a part of the cost of raw material. None of the mills immediately charged freight-in to the Stores Control and prorated the amount to inventory cards. None of the mills set up a freight-in account and allocated the freight-in to individual inventory cards. Eight mills treated freight-in as a manufacturing expense. Two mills reported that they consider freight-in both as a part of the cost of raw materials and as a manufacturing expense. No explanation was given for this procedure. These procedures used by the textile mills compare favorably with the accounting recommendations of Neumer and Nicherson.

In the accounting for scrap five different methods were used by the mills surveyed. Four mills credit the sales price to the material cost of the job on which the scrap
### TABLE 6

**METHODS USED IN ACCOUNTING FOR FREIGHT-IN, SCRAP, AND SPOILED GOODS IN THIRTEEN COTTON MILLS IN TEXAS, 1950**

<table>
<thead>
<tr>
<th>Mill</th>
<th>Freight-In</th>
<th>Scrap</th>
<th>Spoiled Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>B</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>C</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key to table:**
1. Considered as a part of the cost of raw material
2. Immediately charged to the Stores Control and prorated to inventory cards
3. Set up a Freight-In account and allocated to individual inventory cards
4. Treated as a manufacturing expense
5. Credit the sales price to material cost of the job on which scrap originated
6. Credit the sales price to manufacturing expense
7. Credit the sales price as miscellaneous income
8. Credit sales price to waste sales account
9. Credit sales price to machinery account
10. Charged to the production order on which it occurred
11. Charged to manufacturing expense and spread over the cost of all jobs
12. Charged to spoiled goods account
13. Charged to Finished Goods inventory

Two mills credit the sales price of the scrap to manufacturing expense. Four mills credit the sales price of the scrap to a miscellaneous income account. Two mills credit the sales price to a waste sales account, which might
be classified as a miscellaneous income account. One mill credits the sales price to a machinery account. No satisfactory explanation was given for this procedure.

According to Neuner the best possible method for handling scrap is to credit the material cost of the job where the scrap originated. Four mills are using this particular method. It is interesting to note that only six of the thirteen mills surveyed use the two most desirable methods in the accounting for scrap, while seven are using other various methods.

In the accounting for spoiled goods, six mills charged spoiled goods to manufacturing expense and spread the expense over the cost of all jobs. Two mills charged the spoiled goods to a spoiled goods account. None of the mills charged the spoiled goods to the production order on which it occurred. Three mills included spoiled goods as a part of finished goods inventory. When spoiled goods are sold the sales price is credited to this account.

Extraneous Costs in Inventory

The replies to the first question under Section II of the questionnaire relative to the valuation of Raw Materials Inventory can be summarized as shown in Table 7.

It is interesting to note that all of the mills but one priced the raw materials they received at invoice price.
TABLE 7

BASIS FOR CHARGING PURCHASES TO RAW MATERIALS ACCOUNT IN THIRTEEN COTTON TEXTILE MILLS IN TEXAS, 1950

<table>
<thead>
<tr>
<th>Basis</th>
<th>Number of Mills</th>
<th>Per Cent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>At invoice price</td>
<td>12</td>
<td>92.3</td>
</tr>
<tr>
<td>At standard cost</td>
<td>1</td>
<td>7.7</td>
</tr>
<tr>
<td>Total reporting</td>
<td>13</td>
<td>100.0</td>
</tr>
</tbody>
</table>

One mill priced the raw materials at a standard cost figure instead of the regular invoice price.

The replies to the second question, page 1 of the questionnaire, indicated that a large majority of the reporting companies included inward freight and cartage as an element of raw material costs. On the other hand, other costs such as purchasing, receiving and storing are not recorded as raw material costs in the great majority of cases.

Table 8 shows all of the other costs that are included in the inventory value of raw materials.

Freight and cartage in is included in the value of raw materials inventory by eight mills. One mill included all three of the above costs in the value of raw material inventory. One mill also included receiving and storing expense in their inventory value of raw material. It can be observed from the table that still another mill, in addition to freight and cartage in, includes their purchasing
department expense as a part of the cost of their raw material inventory. Three of the mills do not include any of the three above costs in the value of their raw material inventory.

**TABLE 3**

**COSTS INCLUDED IN THE INVENTORY VALUE OF RAW MATERIALS IN THIRTEEN COTTON MILLS IN TEXAS, 1950**

<table>
<thead>
<tr>
<th>Mills</th>
<th>Freight and Cartage In</th>
<th>Receiving and Storing Expense</th>
<th>Purchasing Department Expense</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>D</td>
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<td>X</td>
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<td>X</td>
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<tr>
<td>I</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Perpetual Inventory**

The extent to which raw materials are controlled by perpetual inventory records is evidenced by the answers to the question dealing with the portion of raw materials inventory that are controlled through perpetual inventory records. Under a perpetual inventory system it is usually considered desirable to frequently check the goods actually
on hand with corresponding stores records and then to adjust
inventories for discrepancies. It has often been stated
that where this is regularly done the taking of a physical
inventory at the end of the accounting period is unnecessary.
Questions 4 and 5 were designed to determine the extent of
current practice in the textile mills of Texas in this respect.

In Table 9 is given the percentage of the inventory con-
trolled by stores records, frequency of taking a physical
inventory, and whether a continuous check is made.

### Table 9

PERCENTAGE OF RAW MATERIAL CONTROLLED BY STORES RECORDS
AND FREQUENCY OF TAKING INVENTORY IN THIRTEEN
COTTON TEXTILE MILLS IN TEXAS, 1950

<table>
<thead>
<tr>
<th>Mill</th>
<th>Portion of Raw Materials Controlled by Stores Records</th>
<th>Is a Continuous Check Made</th>
<th>How Often Are Complete Physical Inventories Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100%</td>
<td>Yes</td>
<td>Monthly</td>
</tr>
<tr>
<td>B</td>
<td>100</td>
<td>Partial</td>
<td>No reply</td>
</tr>
<tr>
<td>C</td>
<td>100</td>
<td>Yes</td>
<td>Semiannually</td>
</tr>
<tr>
<td>D</td>
<td>100</td>
<td>Yes</td>
<td>Quarterly</td>
</tr>
<tr>
<td>E</td>
<td>100</td>
<td>Yes</td>
<td>Annually</td>
</tr>
<tr>
<td>F</td>
<td>80</td>
<td>Partial</td>
<td>Quarterly</td>
</tr>
<tr>
<td>G</td>
<td>75</td>
<td>No</td>
<td>No reply</td>
</tr>
<tr>
<td>H</td>
<td>100</td>
<td>Yes</td>
<td>Semiannually</td>
</tr>
<tr>
<td>I</td>
<td>100</td>
<td>Yes</td>
<td>Annually</td>
</tr>
<tr>
<td>J</td>
<td>100</td>
<td>Yes</td>
<td>Quarterly</td>
</tr>
<tr>
<td>K</td>
<td>100</td>
<td>Yes</td>
<td>Semiannually</td>
</tr>
<tr>
<td>L</td>
<td>100</td>
<td>Yes</td>
<td>Semiannually</td>
</tr>
<tr>
<td>M</td>
<td>100</td>
<td>Yes</td>
<td>Semiannually</td>
</tr>
</tbody>
</table>
It is interesting to note that eleven of the mills, or approximately 86.62 per cent, keep a perpetual inventory on 100 per cent of their raw materials, while two of the mills keep 80 and 75 per cent, respectively, of their raw materials controlled by stores record. The answer to the question, "Do you check your perpetual inventory records by a continuous count?" was made favorably by the mills that kept 100 per cent perpetual inventories. One mill that kept perpetual inventories on approximately 80 per cent of their raw materials took only a partial physical inventory. One mill took a complete physical inventory monthly. Three mills took their inventories quarterly, while four mills took their inventories semiannually. Two mills took a complete inventory only once a year. It may be observed that two mills did not send a reply to this question.

Methods Used in Valuing Raw Materials

There are various methods used by the mills in charging raw materials into work in process. Five methods were reported as now being in use in the thirteen cotton mills surveyed. The methods that were reported are as follows: first-in, first-out; last-in, first-out; moving average; weighted average; and cost or market, whichever is lower.

There are many opinions expressed by leading accountants as to the advantages and disadvantages of each of these
methods. A few of these opinions are presented in the following pages.

The first-in, first-out method of pricing is successfully used where the volume of units handled is relatively small or where the items are of a bulky nature and have a rather high unit price. When the first-in, first-out method is used, the issued items are always priced at the oldest price until all units purchased at that price have been issued.

Devine presents a concise summary of the advantages to be derived from the first-in, first-out procedure:

1. It purports to exhibit cost and thus satisfies the prejudices of the legal accounting professions (as well as those of the Bureau of Internal Revenue).
2. By this method the inventory is drawn from the actual records in a simple and systematic way, all guesswork and uncertainty being eliminated.
3. It approximately conforms to good economics and sound business principles in that the inventory value so derived is commonly a fair representation of current commercial value.
4. It is based upon a definite and understandable assumption with respect to the movement of goods through the business enterprise, an assumption which might well be validated as closely as possible as a matter of good business.

There are, however, rather serious disadvantages attaching to the practical application of first-in, first-out. Neuner points out the practical disadvantages of this method as follows:

Two problems arise in the use of this method of inventory pricing. The first is the question of returns to

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the vendor of merchandise found unsatisfactory some
time after purchase. The vendor will always be
charged with goods at the price of which purchased.
However, if the balance column no longer contains
goods at the price originally paid, since all sub-
sequent purchases were either at a higher or lower
price, the original entry will not agree with the
amount and unit prices on the stores ledger. . . .
A second problem arises in the treatment of returns
to the storeroom of excess materials. Assume . . .
all the 12¢ material and some of the 14¢ material
had been issued. Thereafter, some of the material
issued at 12¢ is returned to the storeroom as excess.
Should it be treated as old material and placed be-
fore the remaining 14¢ material or treated as though
it were a new purchase and placed after the 14¢
material? Theoretically, at least, either treatment
would cause the order on which the previous issue of
14¢ material was used to be incorrectly stated since
there are still some 12¢ materials on hand which ac-
cording to the first-in, first-out rule, should be
allocated to this order.6

A second method, which was reported as being used by
Texas textile mills in valuing raw material inventory, is
the last-in, first-out approach. Under this approach the
cost of the inventory is assumed to consist of the oldest
charges represented in the existing accounts and cost of
sales is accordingly assumed to be made up of the latest
costs incurred. The advantages and disadvantages of this
method according to Paton are as follows:

The peculiar merit of "Lifo," it is contended, is the
minimizing of the effect of price movements in the
periodic reports. When prices are advancing sharply
the charging of the latest acquisitions to cost of
sales evidently tends to increase cost of sales and
reduce net profit, and when prices are falling the
same procedure has the effect of lowering cost of
sales and improve the operating showing. This state-
ment of the support for the method reveals the

6Neuner, op. cit., p. 107.
principal line of objection to it: it tends to bring about an appearance of stability where there is actual fluctuation. This, it can be argued, is the very antithesis of sound accounting. The purpose of the particular income report is to show the results of business operation as brought about by the impinging conditions of the particular period—and not the results of an average or "normal" year. Moreover, the procedure is objectionable in that the movement of goods seldom if ever corresponds even roughly to the underlying assumption, and it would be very poor operating policy to handle goods on a LIFO basis.\footnote{William A. Paton, \textit{Essentials of Accounting}, pp. 502-503.}

The moving average method is used by textile firms desiring the average cost of units of materials rather than the actual costs. It is the contention of various writers that if the prices of stores fluctuate frequently, more satisfactory costs may be secured by the use of the average method than the first-in, first-out method.

The weighted average method of computation used by certain textile mills is an attempt to give recognition to the fact that the units in the various purchases are seldom equal and to use this information in the distribution of costs.

The weighted procedure assumes that the cost which should be withheld from operations bears the same proportion to the total cost of goods available for sale as the individual units priced on the assumption for a weighted distribution from the specific purchases (and beginning inventory) bear to the cost of the entire lot of goods available for sale.\footnote{Devine, \textit{op. cit.}, p. 56.}

The weighted average method is not without merit, but before proceeding to a discussion of its advantages, the
moving average technique requires attention. According to
Devine the moving average procedure is designed to correct
two possible objections to the traditional weighted method.

First, for concerns which find it desirable to
price out the inventories to specific jobs or orders, the weighted average method cannot be used without
modification, since the information necessary for
its application is not available at that time.
Second, the weighted average assumes that the cost
figure of the final inventory is made up of unit
costs taken proportionally from the various purchases
during the period.

Essentially the moving average method accepts
the assumptions implicit in the weighted average
process, but in addition it recognizes that sales
during a period require the delivery of physical
units, which are usually purchased before the sale, and translates this fact into accounting for costs
by decreasing the amount available by the number of
items sold multiplied by the average cost per unit
at the time of the sale.\footnote{Ibid., pp. 56-57.}

It is now desirable to turn to the advantages claimed
for the weighted and moving average methods. The following,
by J. Chester Crandell, a C. P. A., was given at the annual
meeting of the American Institute of Accountants, September
21, 1938, and summarizes the arguments for these methods.

As an example (which for simplicity I shall state
on a weighted average basis), let us consider an oil
barrel into which is poured successively a certain
number of gallons of oil, each of an identical nature
and test, and at different costs per gallon—say 10
gallons at 6\$, 30 at 8\$, 10 at 10\$, and 50 at 12\$, a
total of 100 gallons at a total cost of $10, an average
of 10\$ per gallon.

If one gallon is now sold, the gallon withdrawn
cannot be identified, and as a matter of fact it
probably actually consists of 1/100 part of each of
the 100 gallons which were originally poured into the
barrel. The purchaser does not care which gallon he receives, and therefore each gallon commands the same selling price. The seller, whichever gallon is delivered, parts with 1/100 of the total and has 99/100 left. Prior to the sale he had 100 gallons, which stood him $10; after the sale he has 99/100 of 100 gallons, and by any logic with which I am familiar, from an economic point of view the remaining 99 gallons stand him $9.90. That is why I believe that only by the moving average method of costing sales and determining resultant inventory values can the changed economic status of the seller be correctly reflected.

That is, I believe, equally true in a case where, instead of pouring the 100 gallons of oil when purchased into a single container, all gallons purchased are segregated and continuously identified by being placed in identical gallon bottles, numbered successively from 1 to 100. It is of course technically true that if the shipping clerk delivers gallon bottle number 15, the seller will part with an identified gallon of oil which actually cost him 8 cents, but to use 8 cents in determining the gross profit from the sale would not, in my opinion, measure the change in the economic status of the seller. Under such a plan, by selecting a particular gallon for delivery, the seller would be able to show whatever profit he wished on his profit and loss statement, and yet the fact is that since he parted with 1 out of 100 identical units, whichever he chose to deliver he would have reduced his inventory assets by an identical value, 1/100 of the previous whole. This, it seems to me, is sufficiently reasonable from the standpoint of principle to remove from serious consideration the costing of sales on the basis of selected identified purchases of identical goods. 10

Crandell is making an earnest attempt to show that in certain cases the distribution of costs need not, and indeed should not, follow the costs of specific items. Here is a plea for matching costs and revenues in a manner that transcends the force of the individual unit and brings results which he thinks are of a more significant nature.

10Ibid., pp. 57-58.
Cost or market, whichever is lower, is one of the oldest methods of inventory valuation. It is a compromise formula, a rule of conservatism, rather than an independent basis of valuation. Numerous accountants have expressed their opinion pro and con in regard to this method.

In defense of the cost or market method, whichever is lower, a few authorities may be cited as being more or less representative of the group. Sanders\textsuperscript{11} seems to admit that the method may not be altogether consistent, but concludes that it works out in a satisfactory manner in practice. Rorem\textsuperscript{12} holds that the procedure is an attempt to adjust the values to such amounts as may be reasonably be expected to be recoverable in the course of future operations.

In the *Accounting Research Bulletin* Number 29, published by the American Institute of Accountants in July, 1947, was given the following information in regard to the cost or market, whichever is lower, basis:

The rule "cost or market, whichever is lower" is intended to provide a means of measuring the residual usefulness of an inventory expenditure. The term "market" is therefore to be interpreted as indicating utility on the inventory date and may be thought of in terms of the equivalent expenditure which would have to be made in the ordinary course at that date to procure corresponding utility. As a general guide,

\textsuperscript{11} T. H. Sanders, "Reports to Stockholders," *The Accounting Review*, IX (September, 1934), 210.

utility is indicated primarily by the current cost of replacement of the goods as they would be obtained by purchase or reproduction. . . .

The purpose of reducing inventory to "market" is to reflect fairly the income of the period. The most common practice is to apply the "lower of cost or market" rule separately to each item of the inventory.13

Much has been said against this method by some of the leading men in the field of accounting; perhaps Paton has had more to say than others. The following is his belief in regard to the lower of cost or market method:

Through its use earnings not realized by sale are in general excluded from the income report while unrealized losses—in the form of falling cost values of goods on hand—are taken into account, usually in the form of an increase in the recognized merchandise cost of sales. By "market" in this connection is generally meant the estimated cost of replacement, although some accountants define market as estimated net selling value where this figure is lower than either recorded cost or replacement cost. The thoroughgoing use of this basis requires the ascertaining of both actual cost and replacement cost or "market" for each item of the inventory appearing on the underlying cards or sheets. For a large inventory this is a very considerable task, and herein lies a serious weakness of the basis from a practical standpoint.

Cost or market, whichever is lower, notwithstanding its wide adoption in some form in practice, is an illogical approach to inventory valuation, a fact which becomes very apparent when the effect on the periodic income report is considered. . . . The juggling of operating net between periods through the application of "cost or market, whichever is lower" to the inventories may be so marked in periods of sharp price movements as to make the course of net income from month to month or quarter to quarter, as shown by the comparative operating statement, move contrary to the volume of business, with the result that the comparative data are downright misleading.

The vogue of "cost or market, whichever is lower" was fastened in considerable measure by overemphasis, in earlier days, on the statement of financial condition as opposed to the income statement. That is bad reporting to overstate asset values in the position statement may be taken for granted, but the adoption of "cost or market" is a very clumsy and ineffective way of attempting to avoid such overstatement. From the standpoint of the presentation of income reports useful to operating management the rule is a nuisance rather than a bit of business wisdom. Fortunately there are some signs that the enthusiasm for this approach to inventory valuation is waning.14

In the survey of the textile mills in Texas it was found that three of the mills use the last-in, first-out method of valuation. Five mills, or approximately 38.46 per cent, reported using the first-in, first-out method of valuation. Cost or market, whichever is lower, was reported as being used by only two of the mills. The moving average method was used by two mills. One mill used a weighted average method. In Table 10 is presented the methods used in charging raw materials into work-in-process in thirteen cotton textile mills in Texas.

It was found from the data gathered that the method now used in charging raw materials into process has always been in use in seven mills, while the remaining six mills have changed to the present method now in use. All of the changes except for the one made by one mill have been made since 1940. One mill made a change from a moving average method in 1936 to last-in, first-out. Another mill changed to their present method in 1940; they did not state the method that

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14 Paton, op. cit., pp. 503-504.
was previously used. Four mills made a change in 1941 to their present method. Three mills were using cost or market, whichever is lower, while one mill changed from a weighted average method.

**TABLE 10**

METHODS USED IN CHARGING RAW MATERIALS INTO WORK-IN-PROCESS IN THIRTEEN COTTON TEXTILE MILLS IN TEXAS, 1950

<table>
<thead>
<tr>
<th>Mill</th>
<th>First-In First-Out</th>
<th>Moving Average</th>
<th>Last-In First-Out</th>
<th>Weighted Average</th>
<th>Cost or Market Whichever Is Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>C</td>
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<td>E</td>
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<tr>
<td>M</td>
<td></td>
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</tr>
</tbody>
</table>

The larger majority of the mills were reported as valuing their raw material inventories for balance sheet purposes at last-in, first-out method. Moving average method was the second most popular method, with cost or market, whichever is lower, being the third and least used method reported.

Table 11 presents a summary of the various methods now used by the mills in the valuation of their raw material inventories for balance sheet purposes.
TABLE II

BALANCE SHEET VALUATION OF RAW MATERIALS IN THIRTEEN COTTON TEXTILE MILLS IN TEXAS, 1950

<table>
<thead>
<tr>
<th>Mill</th>
<th>Last-in, First-out</th>
<th>Moving Average</th>
<th>Cost or Market Whichever is Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>B</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>C</td>
<td>X</td>
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<tr>
<td>D</td>
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<td>L</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Of all of the various methods that may be used in the valuation of raw material inventory for balance sheet purposes, only three methods were reported as being used by the textile mills. Approximately 54 per cent of all of the mills reported that they used the last-in, first-out method of valuation. Six mills used a moving average method, while three mills used cost or market, whichever is lower. There are many interpretations of cost and market, and for this reason questions were designed to determine how each mill determined cost and market. Two mills, using lower of cost or market, determine cost by using a moving average method. Three mills consider market as the market quotation at the close of the accounting period.
Seven of the thirteen mills have always used the same method in the valuation or raw material inventories for balance sheet purposes. Six mills have changed from their original methods. Four mills made their change in 1941. One mill made a change in 1940, while another made their change in 1936. Three mills originally used cost or market, whichever is lower. One mill used a weighted average, while another did not report the method they previously used in the valuing of raw materials for balance sheet purposes. Most of the mills seem to bear out the thoughts of Paton on the decline of the usage of the cost or market, whichever is lower method of valuation.

Of the thirteen mills covered in this study, five of them reported the use of a raw material inventory valuation reserve. The purpose for which the reserve was provided is uniform for four of the mills; the fifth mill did not state the purpose of the reserve. The purpose of the reserve as reported by each mill was to reduce cost value, standard value, or normal value of inventory to market.
CHAPTER III

THE VALUATION OF GOODS IN PROCESS INVENTORY

Raw Materials in Process

When the three elements of manufacturing cost—raw materials, direct labor, and factory overhead—are totaled for a current period, the sum is the cost of goods in process, or the cost of goods in process of manufacture, provided that there was no beginning inventory of goods in process. As the various amounts of these three elements of cost are put into production, their money value is charged to a control account called the Goods in Process account or the Goods in Process Inventory account. It is common practice, when referring to certain inventory accounts, to dispense with the word "inventory." For example, the Goods in Process Inventory is often referred to as merely Goods in Process.

The Goods in Process control account is one of the most important cost accounts. This inventory account is the clearing house for all the cost elements. The cost of the raw materials, the direct labor, and the overhead expense is charged into this inventory account as the various elements enter into production. As the various units of
production are finished, or as different jobs are completed, the costs accumulated for them are transferred out of the Goods in Process to the Finished Goods Inventory account. It is, therefore, extremely important that extraordinary care be exercised in handling the postings to the Goods in Process account, in order that the units or jobs shall be properly costed. Furthermore, the debit balance in the Goods in Process account at the close of any month represents the accumulated cost of uncompleted units or jobs. Since this inventory account is used in the determination of the profit or loss for any given period, it may be easily understood that its accuracy is imperative. Reitell and Harris say that an accurate balance in the Goods in Process Inventory account depends primarily on four things:

1. Properly priced requisitions for the accurate amount of raw materials place into production;
2. accurately figured time slips covering the exact number of hours of direct labor employed at proper rates per hour for each employee;
3. a correct method of costing the product, either unit or job, with its share of the overhead expense;
4. the possession of definite knowledge of the cost of every completed unit or job that is transferred from the Work in Process Inventory account to the Finished Goods Inventory account.

The valuation of Goods in Process Inventory in this research study is broken down into three major parts: Raw Material in Process, Direct Labor in Process, and Factory Burden in Process. Before going into a discussion of the

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1 Charles Reitell and Gould L. Harris, Cost Accounting, Principles and Methods, p. 58.
methods used in the valuation of these three types of inventories that make up the Goods in Process Inventory a brief summary is presented on the usual procedure in the taking of a Goods in Process Inventory in a cotton mill.

Methods of taking inventory are given by Fitch. The inventory of raw materials and finished product in a cotton textile mill presents no unusual feature. With respect to Goods in Process, however, it is advisable, wherever possible, to close down the mill at inventory time, as it is very difficult to take an accurate process inventory while the materials are constantly moving from one department to another.

Employees charged with the responsibility of taking the inventory should be instructed in advance to leave the materials in their respective departments in as orderly a manner as possible at the time of closing for inventory purposes. They should also be cautioned against moving material from one department to another after the work of taking the inventory has started and remains in process.

Departmental tests to establish unit weights may be made in advance of the inventory takings, as, for example in the card room, the average weight of laps and of sliver in cans; in the speeding department, the average weight of roving on bobbins; in the spooling department, the average

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weight of yarn on spools. Such data, ascertained in advance, will facilitate the completion of the inventory when the actual count and weight of materials in process is taken.

In the spinning department, in taking the actual count of bobbins in creels, the bobbin capacity of the spinning frames is used, the bobbins being regarded as half full; and similarly for yarn on bobbins, the spindle capacity of the frames is used, the bobbins again being regarded as half full.

On the looms in the weave room will be found both process material and cloth; for example, filling yarn and warp beams on one side and cloth on another. The filling at the looms may be ascertained from the number of looms in operation, the average number of bobbins per loom and weight of filling yarn per bobbin.

When warp beams are set in looms they are considered as being in the weaving process. A beam consists of a certain number of cuts, each cut representing a fixed yardage and having a standard weight per cut which varies with the kind of fabric. Each beam has a ticket attached showing the quality, yardage, and cuts. A strip of tickets for the operator is attached to the loom, each ticket representing one cut of material. As each cut is taken from the loom in the form of cloth a ticket is torn from the strip and sent to the weave room office by the operator.
The clerk in the weave room office posts it up against the particular loom on the weave room sheets and deducts it from the original number of cuts charged against the loom when the warp was put on. These sheets will show at all times the number of cuts in process. However, the cuts in process are not all in warp, as almost invariably each loom will have some cloth on it, and, inasmuch as the cloth has both warp and yarn filler, it has to be deducted from the warp cuts remaining in process and valued as cloth in looms. An estimate of one-third cut per loom is made for cloth. The warp inventory in process should be verified by checking for the weavers' tickets—attached to looms—to the weave room sheets in support of the number of cuts shown to be in process by this record.

In the weave room all quantities are expressed in pounds. Upon leaving the weave room the material is converted into yards.

Methods of Valuation of Raw Material in Process

Question 1 in Part 3 of the questionnaire used in this study was designed to find out what basis is being used in the valuation of raw material in process. Six different methods were reported as being used. Table 12 shows the various methods that each mill uses in the valuation of raw material in process.
<table>
<thead>
<tr>
<th>Mill</th>
<th>Last-in</th>
<th>First-out</th>
<th>First-in</th>
<th>First-out</th>
<th>Weighted Average</th>
<th>Moving Average</th>
<th>Standard Cost</th>
<th>Cost or Market, Whichever Is Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>B</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>D</td>
<td></td>
<td></td>
<td>X</td>
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<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>E</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>F</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>G</td>
<td></td>
<td></td>
<td>X</td>
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<td>X</td>
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<td>H</td>
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<td>X</td>
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<td></td>
<td>X</td>
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<tr>
<td>I</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>J</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>K</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>L</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>M</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Six mills, or approximately 46 per cent of all of the mills, use the last-in, first-out method of valuation. Two mills use the first-in, first-out; two use weighted average, while two others use moving average. Standard cost is reported as being used by one mill. Two mills use cost or market, whichever is lower. One mill determines cost by the first-in, first-out method, while another mill determines cost by a moving average method. Two mills consider market as the market quotation at the close of the accounting period.

There has been much discussion by accountants on the subject of whether raw materials in process should be priced on the same basis of raw materials inventory or on the basis.
of valuing finished goods. A questionnaire study was made by William R. Donaldson which included a question dealing with this subject. The questionnaire was distributed at meetings of the New York and Brooklyn Chapters of the National Association of Cost Accountants (N. A. C. A.).

It was requested that the members present their view as to those practices they approve, those they deem optional but less desirable, and those they do not approve. The following is a summary as given by Donaldson on this subject:

Whether materials in process should be regarded for market pricing purposes from the angle of the raw materials constituents therein or from the angle of the finished product which they will compose, is a moot question. While the majority incline toward the raw material view and specify pricing should be on the same basis as raw material, they signify quite strongly that if resulting finished product shows a profit above cost it is not necessary to reduce material in process to raw materials market. Such an attitude, when combined with the ideas of those who lean toward the finished product angle, leaves the question a bit confused. The writer is inclined to think that this supports his own observation that in those industries where basic raw materials constitute the largest part of finished goods cost, market price of finished goods moving somewhat in relation to raw material prices, the materials in process are priced on the raw material base (for example—woolen and cotton yarns and piece-goods, castings, pipings, strip steel and brass, copper wire, etc.).

Referring to Table 10, page 29, the methods used in charging raw materials into process, a noted difference can be seen between this method and the method used in valuing

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raw materials in process. From a comparison of Table 10 and Table 12 it is found that seven mills, or approximately 54 per cent, price their raw materials in process inventory on the same basis as their raw materials.

It was found that six of the mills have always used the same method in the valuation of raw materials in process, while six have made changes in their original method. One mill sent no reply to this question. Four mills made a change in 1941, one made a change in 1940, while the remaining mill made their change in 1936.

Direct Labor in Process

Under the continuous process cost system little distinction is made between direct and indirect labor in a given department. All labor costs are departmentalized, that is, the payrolls are kept by departments and labor costs are entered on the continuous process cost sheet as part of the cost of operating the various departments.

According to Neuner the ultimate objective of payroll accounting for a manufacturing concern is to establish "(1) how much the worker should be paid weekly, and (2) how this labor cost should be distributed to various articles." The amount paid each worker is not too difficult to determine.

4 John J. W. Neuner, Industrial Cost Accounting, p. 150.
In a job order system, the distribution of the labor cost to the various jobs is a more involved process. The payroll records, time tickets, and the piece-rate tickets are necessary for the calculation of the amount each worker has earned. Job order cost accounting is concerned with the problem of determining how much labor was used on each job. The two kinds of labor—direct and indirect must be distinguished, since direct labor can be allocated directly to the specific jobs on which it is used, whereas the indirect labor is transferred to the Factory Burden account and subsequently distributed as such.

It was found from the data gathered that none of the mills use time clocks. It was also found that none of the workers in any of the mills fill out a job time ticket daily, or at any other time. The foreman in charge of each department keeps the time records for each employee in his department. From the data gathered it appears that there is some weakness in determining the difference between direct and indirect labor.

Ten mills, or approximately 77 per cent of all the mills, stated that their labor costs are stated at the actual figure as represented by the amount charged to the Goods in Process account. Two mills said that their labor in process is stated at a standard cost figure. One mill did not reply to this question.
Accounting Treatment of Overtime

Various methods are used in paying overtime to their employees. All of the mills reported that they pay time and one-half for all over forty hours per week. Three mills pay time and one-half for all over eight hours per day. Two mills reported that they pay double for work on Sunday.

A piece rate incentive plan is used in all of the mills. Nine of the mills base their piece rate plan on a weekly basis, while two mills base it on a daily basis, and one mill uses a bi-weekly plan. One mill did not state the method they use in regard to their piece rate plan.

There are several conditions under which overtime bonus may arise and there are also several treatments of the extra overtime bonus.

Overtime due to general business conditions is known as regular overtime. It is a customary charge to production and will appear on all orders. According to Neuner, five one method of accounting treatment of such overtime bonus is to charge that paid to the factory workers to the factory burden account, that to the office workers to the administrative expense, and that paid to the sales force to the selling expense. A second possible treatment was also given. Since overtime appears to be a regular occurrence in a firm under the above conditions, it seems that the overtime really

\[5\] Ibid., p. 163.
amounts to an increased rate of pay for all concerned. Therefore, instead of treating the overtime as a manufacturing expense, it might be advisable at the end of regular accounting periods, to merge the regular labor costs with the overtime bonuses paid to the direct factory workers and divide by the number of hours actually worked. This new corrected labor cost rate should be used in pricing the job time tickets for the various jobs. This really amounts to making the direct labor overtime bonus part of the direct labor costs. The one disadvantage which makes this impractical is the additional expense involved in computing labor costs.

Overtime sometimes arises from some special rush or demand of a particular order.

Since the routing of the production is at the convenience of the producer, it would not be proper to charge any particular job or jobs with overtime premiums. Otherwise similar jobs would bear varying rates of labor costs, and, if burden rates were based on labor disproportionate charges for manufacturing overhead.

Insofar as specific jobs do not cause overtime premiums, it would be better in most cases to charge such premiums to departmental overhead. 6

The National Association of Cost Accountants conducted a survey of the practices of overtime factory accounting in 263 companies. In this survey, 122 include the overtime premiums in inventory values, 78 companies completely exclude such premiums from the inventory values, and 63 companies, partially include them in inventory values through

a normal allowance in overhead. Table 13 is taken from their data given in the N. A. C. A. Bulletin, August 15, 1941, pages 1553 to 1570. Only those companies, 122 of them, that included overtime premium in inventory costs are presented.

**TABLE 13**

**PRACTICE FOLLOWED IN 122 FIRMS IN THE ACCOUNTING TREATMENT OF OVERTIME WAGE PREMIUMS**

<table>
<thead>
<tr>
<th>Practice Followed</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a cost of direct labor</td>
<td>68</td>
</tr>
<tr>
<td>As an element of manufacturing expense</td>
<td>41</td>
</tr>
<tr>
<td>By division of variance account containing overtime premium between inventories and profit and loss (for standard cost)</td>
<td>11</td>
</tr>
<tr>
<td>Total including in inventory values</td>
<td>122</td>
</tr>
</tbody>
</table>

Sixty-eight firms, or approximately 56 per cent of the 122 firms, consider overtime premiums as a cost of direct labor, while forty-three firms, or approximately 35 per cent of the firms, considered it as an element of manufacturing expense.

The cotton mills surveyed mention two methods as being in use in the treatment of overtime wage premiums: (1) overtime wage premiums on direct labor is considered as a cost of direct labor, and (2) overtime wage premium on direct labor is considered as an element of manufacturing expense.
Ten mills, or 77 per cent, consider overtime wage premiums on direct labor as a cost of direct labor.

Accounting for Payroll Taxes Paid by Employer

Payroll taxes paid by the employer on direct labor is another problem in the accounting for labor. There is considerable variation of opinion in regard to the treatment of these taxes.

A recent investigation by the N. A. C. A., for example, revealed the different methods used by employers for treating the tax paid by the employer on direct labor payrolls. The result of their study is given in Table 14.

**TABLE 14**

METHODS USED BY EMPLOYERS FOR TREATING THE TAX PAID BY THE EMPLOYER ON DIRECT LABOR PAYROLLS*

<table>
<thead>
<tr>
<th>Method</th>
<th>Number Firms Reporting</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>As an element of burden cost</td>
<td>131</td>
<td>50</td>
</tr>
<tr>
<td>Included in basic rate as an element of direct labor cost</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>As a general or administrative expense</td>
<td>76</td>
<td>29</td>
</tr>
<tr>
<td>Applied to labor cost at a fixed per cent</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Miscellaneous methods</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>259</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Fifty per cent of all of the firms reporting in the N. A. C. A. survey consider taxes paid on the direct labor payroll as an element of burden cost. Seventy-six or 29 per cent of all the firms consider this tax as a general or administrative expense.

The relative merits of the various proposals have been well described by the Research Staff of the National Association of Cost Accountants:

Probably most accountants will agree that logically such taxes represent an additional cost of labor, but they feel that practical considerations must be given some weight in deciding upon the accounting treatment to be accorded them. To make the issue clear cut this question referred to direct labor only, although it can be as logically argued that the taxes should follow and be combined with compensation paid indirect laborers, salesmen, office workers, and executives.

For the benefit of those who feel that payroll taxes on direct labor are logically factory or general expense items, let us pose a question. Suppose you were attempting to determine whether an operation now performed by hand labor could be more economically performed by machines with a few operators. In making your calculations, would you include payroll taxes on the earnings of the direct laborers who are dispensed with or would you eliminate the taxes along with the direct labor cost? The answer is obvious. Payroll taxes on direct labor are an additional cost of that labor and not a cost of facilities and services for making the labor more effective.

Up to this point we have been talking of what is logical. Now let us consider the practical problems involved. To attempt to add 1, 2, 3, or some other per cent to every piece rate, even hourly rate, to the labor cost of every operation process, or job, would involve a tremendous amount of clerical effort in most industrial concerns and would hardly be justified by the results produced. There are other means of achieving the same end. If all of the direct laborers in a plant are subject to the same rate of tax and all of the direct labor cost is taxable, it follows that a constant percentage of tax applies to all direct
labor costs. Accordingly, we can wait until the costs are summarized by jobs, processes, or lines of product, and then apply to the jobs, processes, or lines of product by the use of this constant per cent the payroll taxes which have in the meantime been accumulated in a tax account. Much detail work is saved and the results are completely accurate.

Approximately 77 per cent of all the cotton textile mills in Texas consider payroll taxes paid by the employer on direct labor as an element of manufacturing expense, while two of the mills consider it a general or administrative expense. One mill did not send a reply to this question. It is interesting to note that none of the mills consider payroll taxes as an element of direct labor costs, while in the survey conducted by the Research Staff of the National Association of Cost Accountants 50 per cent of 259 firms considered payroll taxes as an element of burden and only 8 per cent included it as an element of direct labor costs.

Factory Burden in Process

The central problem in factory cost accounting is the treatment of overhead or burden costs. The burden costs are the indirect costs of manufacture. The transfer of burden from burden accounts to work in process accounts is usually done by means of regular monthly journal entries entered on a factory ledger in detail and on general ledger in the proper control accounts. Difficulty with such detailed work

Ibid., pp. 160-161.
in process controls, however, is the trouble required to keep them reconciled.

According to Alford in his *Cost and Production Handbook*, burden in process may be controlled by: (1) a single account; (2) separate accounts for each department, and (3) separate accounts by commodities. But whatever system is used, the totals for burden on the work in process cost cards should equal the balances in the factory ledger burden work in process control accounts.

Donaldson drew up a questionnaire to secure a cross-section of opinion as to the practices generally recognized as proper and acceptable on some accounting procedures. Included in this questionnaire was a group of questions pertaining to the method used in the valuation of factory burden in process. He presented this questionnaire to a group of accountants at two National Association of Cost Accountants meetings. He found the following information in regard to the correct procedure in the valuation of factory burden in process:

Most of the responses approved the use of burden prices developed by the normal functioning of the cost system; adjustment to closing months actual rate of burden met with disapproval; predetermined rate set at the beginning of the year received 50 per cent approval; and new rate based on review of year's operation drew the same degree of acceptance.

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From the answers to the questionnaire used in surveying the cotton textile mills in Texas, it was found that seven of the mills valued factory burden in process as the actual figure reflected on the books through the normal functioning of the cost system. One mill adjusted burden to the closing months actual rate. This method was disapproved in the survey conducted by Donaldson. One mill used a standard cost figure. Three mills value burden at a predetermined rate set at the beginning of the period. Two of these mills stated that this predetermined rate was calculated yearly, the other determines this rate quarterly. In the case of two of the mills, the auditors for the mill determine the rate to be used. One mill did not reply to this question. It was found that all of the mills have always used the same method in the valuing factory burden in process.

In reply to the question dealing with the disposition of over and under applied burden, only four mills answered this question. The accounting treatment for closing the under and over applied burden account varies with different types of businesses. According to Reitell and Harris the net difference in the under and over applied burden account may be closed to the profit and loss account, the cost of sales account, or to a reserve for burden account. The actual write-off need not be made monthly, but may be made

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10 Charles Reitell and Gould L. Harris, Cost Accounting, Principles and Methods, pp. 374-375.
only at the end of the year. The variance, however, may be considered in the monthly financial statements. Some companies write off unfavorable variances in their entirety, but suspend or defer favorable variances on the ground of conservatism and a desire to avoid anticipation of profit, even though the divergent practice is theoretically inconsistent. Under this policy, the amount of write-off of the favorable variance is in the proportion which current sales bear to the current production. Other companies use the deferral method for both unfavorable and favorable variances. Still other concerns write off controllable variances to cost of sales and volume variance to profit and loss. Still another variation in practice is to charge profit and loss with the under-absorbed fixed overhead considered as a cost of idle capacity and to charge controllable variance to cost of sales.

If the burden variance is closed to cost of sales, the accounts may be adjusted either monthly or yearly, usually the latter.

It was found that two of the cotton textile mills that answered the question dealing with over and under applied burden closed the account at the end of each month into the cost of goods sold account, while a third mill closed their account at the end of each month into work in process, finished goods, and cost of goods sold on a prorated
basis. The fourth mill carried their balance forward from month to month and closed the account at the end of the year into the profit and loss account.
CHAPTER IV

THE VALUATION OF FINISHED GOODS INVENTORY

Accounting Procedure for Finished Goods

Finished Goods is a controlling account which controls the job orders completed and not yet sold, although the identity of these orders may be lost in the subsidiary records of finished goods where all production orders for the same product are combined into one subsidiary account for that product. The Finished Goods account is charged with the accumulated cost of all orders completed and credited with the cost of all goods sold. The balance of the account represents the cost of all goods completed but not yet sold.

Accounting for finished goods inventory presents many of the same problems encountered in the accounting for raw material and goods in process inventory and requires substantially identical procedures. There may be a stock ledger sheet or card for each finished product item. Together these sheets are the finished stock subsidiary ledger and are represented in the general ledger by the Finished Goods Inventory controlling account.
Lasser has briefly outlined the appropriate procedures that must be provided for in the accounting for finished goods. These procedures are as follows:

1. Planning the requirements for finished stock and setting minimum and maximum quantities for each item.
2. Requisitioning the factory for replenishment.
3. Posting the finished stock ledger for receipts. The control account is charged by summarizing the total output of the period transferred to stock.
4. Allocating the stock to, or reserving it against, specified sales or shipping orders.
5. Issuing stock on sales or shipping orders, posting the issued section of the stock ledger and recalculating the balances.
6. Accounting for returned shipments.
7. Verifying the balances on hand by processes of continuous check or periodic physical inventory, and adjusting the stock ledger and the control account for discrepancies.
8. Revaluing the finished inventory.¹

These procedures are obviously closely related to those for summarizing the cost of goods produced and shipped, as the finished goods inventory is a reservoir for the purpose of equalizing the flow of goods between the mill and customers.

Physical control of the finished goods should be an important phase in the accounting process of any textile mill. Management should recognize the value and importance of controlling finished goods in the same manner as they do with respect to cash. A good system of recording finished goods transactions is absolutely essential to obtain proper accounting control. Furthermore, a perpetual inventory

¹J. K. Lasser, editor, Handbook of Cost Accounting Methods, p. 337.
record system maintained primarily with respect to units, but combining related money values whenever and wherever practicable is generally accepted as the most effective and economical means of recording of finished goods transactions.

A perpetual inventory record for finished goods transactions depends for its accuracy and effectiveness on the following: (1) correct starting inventory, (2) adequate and accurate internal control of receipts, (3) adequate and accurate control of deliveries from finished goods stocks, and (4) periodical selective checks of physical inventories.

Good internal control, as a general rule, provides that inventories be taken under the supervision of the accounting department. It therefore becomes the accounting department's responsibility to secure a complete and accurate starting inventory.

For the manufacturer, merchandise receipts represent the deliveries from the last producing or processing department into the custody of the finished goods storekeeper. As such deliveries are made, the manufacturing division should secure a form of receipt, certified by the signature of the storekeeper as to count and description, which is then turned over to the accounting department as the basis of the original entries of transferring finished goods from the work-in-process accounts to the finished goods account.
For adequate and accurate control of deliveries from finished goods stock, no orders calling for shipments to customers should be turned over to the finished goods warehouse for packing and shipping without first, the approval of the customers' credit, the reason for which is obvious, and second, without a copy of the order being retained by the controller's department to provide a positive means of securing the original order after shipment. Thus, quantities actually shipped and other incidental shipping data are secured so that proper invoices can be originated.

Periodical selective checks can be effectively made. Naturally, stock records must at all times be posted currently.

The value of finished goods on hand usually depends on the type of manufacturing plant and its cost accounting system. A plant engaged in the production of job orders usually has a very small amount of money tied up in its finished goods inventory. Because the goods are produced on specific orders, they are usually shipped as soon as completed. A manufacturing concern engaged in process production, on the other hand, usually has a rather large inventory of finished goods on hand.

Methods of Valuing Finished Goods

In the transferring of the finished product to the stockroom, Newlove and Garner say there are only two methods of pricing these goods.
(a) Cost of specific order or orders authorizing the work done, and (b) average cost of product transferred. The first method is, of course, used in the job order cost accounting; the second is used in the accounting for continuous process industries.

The pricing of the finished product from the factory into the storeroom is done at the completion of the factory order in job cost industries, and at the end of the costing period in continuous process industries. A current record of quantities of product transferred is maintained in process cost accounting, but the delay in pricing the finished product is important as it materially simplifies the accounting involved.²

There have been many opinions as to the correct method in the valuation of finished goods inventory. Several of these opinions are given so that the reader may secure a better understanding of the leading methods and so that it may be seen how the methods used by the textile mills of Texas compare with some of these opinions.

The Cost and Production Handbook, edited by L. P. Alford, expressed the following in regard to the valuation of finished goods inventory:

It is highly important for auditing and for bank credit purposes to have finished goods inventory priced at the lower of cost or market. . . . Value of finished goods in a large percentage of manufacturing companies is cost or market, whichever is lower. The Bureau of Internal Revenue, bankers, credit men, and business executives recognize this method of valuation as sound and conservative.³

Neumer expresses the following opinion in regard to the valuation of finished goods inventory:

²George Hollis Newlove and S. Paul Garner, Elementary Cost Accounting, pp. 332-333.
In pricing physical inventories for balance sheet or income tax purposes, there are generally accepted rules. . . . Finished Goods are generally valued at cost or market, whichever is lower.4

Wibbelsman stated the following about the valuation of finished goods inventory:

In spite of the elaborately outlined, and perhaps complicated, methods used in evaluating finished goods, we are still governed of course by the lower of cost or market.

The determination of market for a manufacturing concern can be rather difficult and, I believe, requires consideration from two angles. Market has a different meaning for the manufacturer of a product, the selling price level of which is established by competition within the industry, as compared with the manufacturer of a product, the selling price level of which is established by the manufacturer himself on the basis of his cost.5

Donaldson, in an effort to secure information on cost or market, whichever is lower, drew up a questionnaire which he presented at meetings of the New York and Brooklyn chapter of the National Association of Cost Accountants. It was requested that the members give their opinions to those practices they approved, those they deemed optional but less desirable, and those they did not approve. In the section of the questionnaire dealing with finished goods the following information was found:

Pricing of finished goods on basis of "average" and of "first-in, first-out" receives about equal approval, somewhat more favorable toward the first method with many marking "optional" as to both


methods. Last lot purchased and current month's (replacement) cost methods do not register approval, some few, however, indicating "optional." ... As to market prices, the fair average price offered to the trade, though lower prices may be extended to a favored few, is approved by a large majority.  

From a study conducted by the Research and Technical Service Department of the National Association of Cost Accountants 7 in 1939, it was found that 125 of 297 companies reported the use of cost or market, whichever is lower in the valuation of finished goods inventory. It appears that cost or market, whichever is lower is the most favored method in the valuation of finished goods. The second most popular method was at cost as provided by the cost system used; this method was reported as being used by 95 companies.

It was found from the data gathered on the thirteen cotton textile mills in Texas that five different methods were being used in the valuation of finished goods inventory. The methods reported as being in use were Last-in, First-out, Moving Average, Standard Cost, First-in, First-out, and Cost or Market, whichever is lower. In Table 15 are presented the findings of the methods used by the various textile mills in the valuation of their finished goods inventory.

Five of the mills value finished goods inventory at cost or market, whichever is lower. Of these five mills, two did

---


not state how they determine cost. One of the mills reported the use of first-in, first-out; another uses last-in, first-out; and the third uses moving average to determine cost. All five of these mills consider market as the market quotation at the close of the year.

**TABLE 15**

**METHODS USED IN VALUING FINISHED GOODS INVENTORY IN THIRTEEN COTTON TEXTILE MILLS IN TEXAS, 1950**

<table>
<thead>
<tr>
<th>Mill</th>
<th>Last-in, First-out</th>
<th>Moving Average</th>
<th>Standard Cost</th>
<th>First-in, First-out</th>
<th>Cost or Market Whichever Is Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X#</td>
</tr>
<tr>
<td>B</td>
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<tr>
<td>M</td>
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<td></td>
</tr>
</tbody>
</table>

*No reply as to how cost is determined.*

These five mills are using the methods that were reported as being the best method for valuing finished goods inventory by the *Cost and Production Handbook*, Neumer, Wibblesman, and by the viewpoint of members of the New York and Brooklyn chapters of the National Association of Cost Accountants.
Various methods were listed as being in use by the remaining eight mills, with four of them using the last-in, first-out method.

Of the thirteen mills covered in the survey it was found that nine have always used the same method in the valuing of finished goods. The remaining four mills all made a change in 1941. Three of these mills had previously been using cost or market, whichever is lower, and changed to last-in, first-out, while the fourth changed from a moving average to last-in, first-out.

Accounting Treatment for Inventory Write-Down

The valuation of finished goods inventory at the end of the year on any base other than the costs recorded in the account during the year will result in an inventory write down. This write down may be due to pricing at market values which are below costs, to valuation at new standards which are lower than old standards, to shortages which are revealed by the taking of a physical inventory or by decline in inventory due to obsolescence or any damage to stock which reduces its value.

There are various methods that might be used in the disposition of the inventory write down. In Table 16 are presented various methods used in the disposition of inventory write down in 325 companies. These data were secured from a
study conducted by the Research and Technical Service Department of the National Association of Cost Accountants.

<table>
<thead>
<tr>
<th>Method</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treated as addition to cost of goods sold</td>
<td>137</td>
</tr>
<tr>
<td>Treated as separate profit and loss item</td>
<td>93</td>
</tr>
<tr>
<td>Treated as charge to a reserve previously created</td>
<td>53</td>
</tr>
<tr>
<td>Practice varies</td>
<td>10</td>
</tr>
<tr>
<td>No answer</td>
<td>18</td>
</tr>
<tr>
<td>No finished goods inventory</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>325</strong></td>
</tr>
</tbody>
</table>

It is observed that 137 of the companies, or approximately 42 per cent of all of the companies reporting, treated the disposition of inventory write down at the end of the year as an addition to cost of goods sold. Ninety-three of the companies, or approximately 29 per cent of all of the companies, treated the disposition of inventory write down at the end of the year as a separate profit and loss item.

In the survey made of the Texas cotton textile mills, it was found that only two methods were being used in the disposition of inventory write down at the close of the year. Only seven of the thirteen mills answered the question dealing with inventory write down. Five of these seven mills

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\[8\] Ibid., p. 390.
treat this write down as a separate profit and loss item. Two of the mills treat it as an addition to cost of goods sold.

It can be observed from the study made by the Research and Technical Service Department of the National Association of Cost Accountants and the survey made of the Texas cotton textile mills that 53 per cent of the cotton mills and 42 per cent of the 325 industrial companies report as treating the disposition of inventory write down at the end of the year as an addition to cost of goods sold. In relation to the two studies a larger percentage of the textile mills treat the disposition of inventory write down as an addition to cost of goods sold. From the data gathered this method appears to be the most suited method for the textile mills.
CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

This study has two principal objectives. The first objective was to determine the status of the methods of inventory valuation in Texas cotton textile mills. To accomplish this objective a questionnaire was drawn up, asking specific questions pertaining to inventory valuation. This questionnaire enabled the writer to gather the needed information in obtaining the first objective. In order to have a better understanding of the different methods of inventory valuation the writer, through library research, obtained the opinions of leading writers in the field of accounting on the advantages and disadvantages of the various methods of inventory valuation.

The second objective was to determine how much uniformity, if any, exists in accounting for inventories in the Texas cotton mill industry. Through a comparative study of the answers to the questionnaire used in this study, the uniformity that exists was determined, thus accomplishing the second and final objective.
As a result of the information obtained from the answers to Part II of the questionnaire, it is possible to make certain generalizations regarding the valuation of raw material inventories.

All of the mills but one charge purchases to the raw material account at the invoice price. It is believed that this procedure is considered among most accountants as the most practical method of handling this situation.

Freight and cartage in are considered by most textile mills as an element of the inventory value of raw materials. On the other hand, other costs such as purchasing, receiving and storing are not recorded as raw material costs in the majority of the mills.

Ten of the mills control all of their raw material inventory through perpetual inventory records. Under a perpetual inventory system it is usually considered desirable to frequently check the goods actually on hand with corresponding stores records and then adjust inventories for discrepancies. All of the mills that use a perpetual inventory record state that they do take a complete physical inventory at least once a year, with most of the mills taking a complete physical inventory at least semiannually.

Five of the mills charge raw material into progress at the first-in, first-out method of valuation, while three of the mills use the last-in, first-out basis.
For balance sheet purposes in valuing raw material inventory, last-in, first-out was the most used method; with moving average second in use; and cost or market, whichever is lower, the least used of the three methods reported.

Only four of the cotton textile mills reported the use of an inventory reserve, but all of the mills stated the same purpose of this reserve; which is, to reduce cost value, standard value, or normal value of inventory to market, when lower.

The two leading methods in the accounting for scrap were: (1) credit the sales price to material cost of the job on which scrap originated and also as a reduction to work in process, and (2) credit the sales price as miscellaneous income.

Most of the mills handled spoiled goods as a manufacturing expense and spread it over the cost of all jobs.

Part III of the questionnaire dealt with the valuation of work in process. This section was divided into three parts: (1) raw material in process, (2) direct labor in process, and (3) factory burden in process.

Last-in, first-out is the basis used by most of the mills in valuing raw material in process. First-in, first-out, weighted average, moving average, standard cost, and cost or market, whichever is lower are other methods that were listed as being in use. As can be seen by the use of
six methods, there is not much uniformity in the valuation of raw material in process; however, last-in, first out was the basis most frequently used.

When cost or market, whichever is lower, was reported as being the method in use by a mill, that mill was asked to explain how they determined cost and what basis was used in determining market. All of the mills reported the same basis for determining market, which was the market quotation at the close of the accounting period.

Ten mills reported labor costs at the actual as represented by the amount charged to work in process. Two mills stated labor at a standard cost figure.

None of the mills reported the use of time clocks. A job time ticket is not filled out by each individual employee in any of the mills. The writer, from experience in working in a textile mill, knows that the practice of not using time clocks and not having each employee to fill out a job time ticket daily to be an inaccurate practice in the keeping of time records of the employees. The writer has observed numerous times when people came to work late and left early with nothing being said about this practice by management. In order to have better control over the time of the employees, time clocks should be used and each employee should be required to fill out a job time ticket daily.
Ten mills consider payroll taxes paid by the employer as an element of manufacturing expense. This treatment of payroll taxes seems to be one of the most used methods in most industries.

All of the mills pay time and one half for all work over forty hours per week. Several of the mills have other methods set up under which they pay overtime. A piece rate basis is used in twelve of the mills. Eight of the mills base their piece rate pay on a weekly basis. Overtime wage premiums on direct labor is considered as a cost of direct labor by ten of the mills. Only two of the mills consider it as an element of manufacturing expense. From the above summary on direct labor in process it can be seen that more uniformity is found in the items dealing with direct labor than in any part of the research study. It was also in this section that a lack of internal control or check was found in dealing with the working time of each employee.

In the valuation of factory burden in process seven mills value overhead at the actual as reflected on the books. Three of the mills price overhead at a predetermined rate set at the beginning of the accounting period.

Four mills answered the question dealing with the disposition they made for over and under-applied burden. Three mills close the account each month—of these three, two close the account into cost of goods sold account; the other
mill prorates the amount into work in process, finished goods, and cost of goods sold.

There is not as much uniformity in the valuation of finished goods inventory as one might think. Five methods were used in the valuation of finished goods, without too much concentration on either of the four methods used. Cost or market, whichever is lower, however, was the method most frequently used. Four of the mills used the last-in, first-out basis for the valuation of the finished goods inventory.

Seven mills answered the question on inventory write down at the close of the year. Of these seven, five of the mills treated the write down as a separate profit and loss item; the other two treated it as an addition to cost of goods sold.

Conclusions

It is the opinion of the writer that greater uniformity in the accounting procedures for the valuation of inventories would place published financial statements on a more comparable basis and to that extent would be an aid to investors and to management in comparing results with the data of others in the same industry.

Uniformity of accounting practice within an industry generally leads to a more intelligent understanding of
costs. Such uniformity is helpful to a particular company in controlling its operations and tends to strengthen the price structure since no producer is then unwittingly selling below cost. Greater uniformity can be brought about as business men read and discuss these matters and arrive at a better understanding of the principles involved. It will find expression in the development of uniform systems of accounting for particular industries, and has of course already been done so in many industries. There should be less room for disagreement on concepts of accounting valuation between companies within an industry, and, if rules of conduct are to be effective, they should be developed from within the industry.

Because of the variation in the methods of valuation, it is not sufficient for a company to state in its balance sheet that inventories have been valued at cost or market, whichever is lower. Supplementary information should be given regarding the company's concept of cost and market. At least it should be indicated what method was used to determine cost; and whether market is reproduction cost or estimated net realization value. Insofar as possible a company should be consistent from year to year in its inventory practice. Any substantial change in policy should be clearly stated in the report accompanying the financial statements.
APPENDIX

Questionnaire for a Study of
The Status of Inventory Valuation in Texas Cotton Mills, 1950

I. GENERAL INFORMATION

1. Name of the Mill
2. Address
3. Name of the General Manager
4. Number of years the General Manager has been with the mill
5. Number of Spindles
6. Number of Looms
7. Number of employees (including executives)
8. Number of employees in the Accounting Department
9. Average annual payroll
10. Check each of the following types of Finished Goods you produce:
   A. Ducks   B. Osnarugs   C. Sheeting
   D. Drills   E. Denims   F. Yarns
   G. Gingham   H. Tire Fabrics   I. Others (Please list)

11. Check the type or types of cost system that you use:
   A. Process   B. Job Cost   C. Standard Cost
   D. Other (Please explain)

II. THE VALUATION OF RAW MATERIAL INVENTORIES (Please check the correct answers)

1. Do you charge purchases to the raw material account at:
   A. Invoice price   B. Standard cost
   C. Other (Please explain)

2. Do you include in the inventory value of raw materials:
   A. Freight and cartage
   B. Purchasing department expense
   C. Receiving and storing expense
   D. Other (Please explain)

3. What portion of your inventory of raw materials is controlled through perpetual inventory records? __% 

4. Do you check your perpetual inventory records by physical count throughout the year? Yes No

5. If the answer to (4) is "yes" do you find a complete inventory necessary:
6. Do you charge raw material into process:
   A. First-in, First-out   B. Last-in, First-out
   C. Weighted Average     D. Moving Average
   E. Standard Cost        F. Cost or Market,
   G. Other (Please explain) Whichever Is Lower

7. If (F) is checked in (6) and cost is the basis, check how cost is determined:
   A. LIFO   B. FIFO   C. Weighted Average
   D. Moving Average  E. Other (Please explain)

8. If (F) is checked in (6) and market is used, check how you determine market:
   A. Market is the latest purchase price
   B. Market is the market quotation at the close of the accounting period
   C. Market quotations that exist on free market
   D. Other (Please explain)

9. Is the method you checked in (6) always been in use?
   Yes    No

10. If the answer to (9) is "no," what year was a change made?

11. If the answer to (9) is "no," what method did you use before you made this change?

12. For balance sheet purposes, do you value your raw material inventory at:
    A. FIFO   B. LIFO   C. Weighted Average
    D. Moving Average  E. Standard Cost
    F. Cost or Market, Whichever is Lower
    G. Other (Please explain)

13. If (F) is checked in (12) and cost is used, check how you determine cost:
    A. FIFO   B. LIFO   C. Weighted Average
    D. Moving Average  Other (Please explain)

14. If (F) is checked in (12) and market is used, check how you determine market:
    A. Market is the latest purchase price
    B. Market is the market quotation at the close of the accounting period
    C. Market quotations that exist on free market
    D. Other basis (Please explain)

15. Is the method you check in (12) always been in use?
    Yes    No

16. If the answer to (15) is "no," what year was a change made?

17. If the answer to (15) is "no," what method did you use before you made this change?

18. Do you make use of an inventory reserve for valuing raw materials on the balance sheet?  Yes    No
19. If the answer to (18) is "yes," state the purpose of the reserve.

20. If the answer to (18) is "yes," what account is charged when the reserve is set up?

21. Freight-in paid on incoming raw materials is treated in the following manner:
   _A. Considered as a part of the cost of the raw materials
   _B. Immediately charged to the Stores Control and prorated to inventory cards
   _C. Set up a Freight-in Account and allocated to individual inventory cards
   _D. Treated as a manufacturing expense
   _E. Other (Please explain)

22. Scrap is treated in the following manner:
   _A. Credit the sales price to material cost of the job on which scrap originated and also as a reduction to work in process
   _B. Credit the sales price to manufacturing expense
   _C. Credit the sales price as miscellaneous income
   _D. Other (Please explain)

23. Spoiled Goods are handled in the following manner:
   _A. Charged to the production order on which it occurred
   _B. Charged to manufacturing expense and spread over the cost of all jobs
   _C. Other (Please explain)

III. THE VALUATION OF WORK IN PROCESS INVENTORY
(Material in Process)

1. Raw Material in Process is valued at:
   _A. FIFO _B. LIFO _C. Weighted Average
   _D. Average Cost _E. Standard Cost
   _F. Cost or Market, Whichever is Lower
   _G. Other (Please explain)

2. If (F) is checked in (1) and cost is used, how do you determine cost:
   _A. FIFO _B. LIFO _C. Weighted Average
   _D. Average Cost _E. Other (Please explain)

3. If (F) is checked in (1) and market is used, how do you determine market:
   _A. Market is the latest purchase price
   _B. Market is the market quotation at the close of the year
   _C. Market quotations that exist on free market
   _D. Other (Please explain)

4. Is the method you checked in (1) always been in use?
   _Yes _No
5. If the answer to (4) is "no," what year was a change made?
6. If the answer to (4) is "no," what method did you use before you made this change?__________________________

(Labor in Process)

7. Check the following that apply to Labor in Process:
   _A. Labor costs are stated at actual as represented by the amount charged to Work in Process_
   _B. Labor costs are stated at a standard cost figure_
   _C. Labor costs are stated at replacement cost_
   _D. Other (Please explain)_

8. Is the method you checked in (7) always been in use?
   _Yes_ _No_

9. If the answer to (8) is "no," what year was a change made?

10. If the answer to (8) is "no," what method did you use before you made this change?

11. Do you use time clocks in your mill? _Yes_ _No_

12. Does each individual fill out a job time ticket daily? _Yes_ _No_

13. Payroll taxes paid by the employer on Direct Labor are handled as follows:
   _A. As an element of manufacturing expense_
   _B. Included in basic rate as an element of direct labor cost_
   _C. As a general or administrative expense_
   _D. Applied to labor cost at a fixed per cent_
   _E. Other (Please explain)_

14. Check the methods that you use in paying overtime:
   _A. Time and one-half for all over forty hours per week_
   _B. Time and one-half for all over eight hours per day_
   _C. Double pay on Saturday_
   _D. Triple pay for Sundays and holidays_
   _E. Others (Please explain)_

15. Is a piece rate basis used in your mill? _Yes_ _No_

16. If the answer to (15) is "yes," how is this piece rate paid:
   _A. Daily basis_ _B. Weekly basis_ _C. Monthly basis_
   _D. Other (Please explain)_

17. Check the method that you use in handling overtime wage premiums on direct labor
   _A. As a cost of direct labor_
   _B. As an element of manufacturing expense_
   _C. As an element in the applied burden rate_
   _D. Other (Please explain)__________________________
(Factory Burden in Process)

13. Check the method you use in the valuation of Factory Burden in Process:
   __A. Overhead on work in process is priced at actual reflected on the books
   __B. Overhead is adjusted to closing months actual rate of overhead
   __C. Overhead is priced at a predetermined rate set at the beginning of the period
   __D. Other (Please explain)

19. If (C) is checked in (13), how often is this predetermined rate figured?

20. Who determines this predetermined rate?

21. What disposition is made of the over and under applied burden?
   __A. It is carried forward from month to month until the end of the year and is closed into:
      a. Cost of Goods Sold Account
      c. Other (Please explain)
   __B. It is closed at the end of each month into:
      a. Cost of Goods Sold Account
      c. Other (Please explain)

22. Is the method you checked in (18) always been in use?
   Yes  __No

23. If the answer to (22) is "no," what year was a change made?

24. If the answer to (22) is "no," what method did you use before you made this change?

IV. THE VALUATION OF FINISHED GOODS INVENTORY

1. Check the method you use in the valuation of Finished Goods Inventory:
   __A. FIFO  __B. LIFO  __C. Weighted Average
   __D. Moving Average  __E. Standard Cost
   __F. Cost or Market, Whichever is Lower
   __G. Other (Please explain)

2. If (F) is checked in (1) and cost is used, how is cost determined:
   __A. FIFO  __B. LIFO  __C. Weighted Average
   __D. Moving Average  __E. Other (Please explain)
3. If (f) is checked in (1) and market is used, how is market determined:
   A. Market is the latest purchase price
   B. Market is the market quotation at the close of the year
   C. Market quotations that exist on free market
   D. Other (Please explain)

4. Is the method you checked in (1) always been in use?
   Yes  No

5. If the answer to (4) is "no," what year was a change made?

6. If the answer to (4) is "no," what method did you use before you made this change?

7. If there is any inventory write down at the close of the year, show how it is treated:
   A. Treated as an addition to cost of goods sold
   B. Treated as a separate profit and loss item
   C. Treated as a charge to a reserve previously created
   D. Other (Please explain)

8. COMMENTS ON ANY OF THE QUESTIONNAIRE (PLEASE USE THE REVERSE SIDE OF THIS PAGE)
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