

THE COTTON
MANUFACTURING INDUSTRY
OF THE UNITED STATES

BY

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TO
MY FATHER AND MOTHER

PREFACE

COTTON manufacturing constitutes at the present time one of the most important industries in the United States, and in volume of output this country ranks second among the nations of the world. The task here undertaken is to set forth the relative position of the American cotton manufacturing industry by means of an international comparison of geographical factors, technical methods, labor conditions, and industrial and commercial organization. To provide a basis for comparisons and conclusions, the history of the industry in America is traced and its present organization analyzed. In the historical section attention is directed particularly to the period since 1860, but in the first chapter the history of the industry prior to the outbreak of the American Civil War is sketched.

The work has necessarily been restricted at several points. The early history is not given more space because, for the purposes of this study, it has seemed advisable to concentrate upon the later period. A history of wages in American cotton mills has not been undertaken because of the vast amount of time that would be required to secure the data on which to base any reliable conclusions. In the second part very little is said concerning the European lace industry, because of its complicated character and the small size of our own lace manufacture. Finally, but slight reference has been made to the social conditions under which the operatives live, and no attempt has been made to compare cost of living in the different countries. The object has been to secure unity, and by no means to imply that the question of laborers' welfare or standard of living is less worthy of investigation.

The data for the analysis of the present situation in America and for the comparison of European and American conditions have been obtained largely by personal investigation and inquiry.

Manufacturers, merchants, and other persons connected with the industry have been consulted, in New England, New York, Philadelphia, and the southern mill towns; in various towns in Lancashire; in Bremen, Berlin, Saxony, The Rhine Province, Bavaria, Wurttemberg, and Alsace; in Switzerland; and in Paris, the "Nord," the Vosges, and Normandy. Mills have been visited in all these districts. More than two hundred persons have been interviewed personally and information has been obtained from others by correspondence. Statements of fact in the text not otherwise vouched for are usually based on such information. In inquiries of this sort the personal equation must be allowed for, but by checking up the statements of one man with those of others, I feel confident that, although a few errors and misstatements have doubtless crept into the book, they have been reduced to the minimum.

Inasmuch as this monograph was submitted for the Wells Prize competition in November, 1911, and delivered to the publishers in March, 1912, the Tariff Board's *Report on Cotton Manufactures* appeared too late to permit me to utilize its data in this work. My own conclusions concerning comparative costs, however, are substantially the same as those of the Tariff Board.

I began the study of the cotton manufacturing industry while holding the Charles Carroll Everett Fellowship of Bowdoin College, and continued my researches while an Austin Teaching Fellow at Harvard University. Later, to enable me to conduct the investigation of the industry in the European countries, I was granted a Frederick Sheldon Fellowship from the latter institution. Without this aid the task would not have been completed.

To the numerous business and professional men who have assisted in the carrying on of the study grateful acknowledgment is due, particularly to Major H. L. Higginson, Mr. E. A. Whitman, Mr. Sidney Coolidge, Mr. S. S. Dale, and General S. M. Weld of Boston, Mr. H. L. Knoop and Mr. J. R. Barlow of Manchester, England, Mr. C. A. Albrecht of Bremen, and

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M. T. COPELAND.

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PART I

HISTORY AND PRESENT ORGANIZATION

THE COTTON MANUFACTURING INDUSTRY OF THE UNITED STATES

HISTORY AND PRESENT ORGANIZATION

CHAPTER I

GROWTH BEFORE 1860

Raw cotton was imported into New England from the West Indies before the middle of the seventeenth century,¹ and small importations continued during the following hundred and fifty years.² This material was spun into yarn and also used for other purposes.³ But it was not till the last decade of the eighteenth century that the manufacture of cotton was begun on a considerable scale in the United States.

The progress of the industry prior to 1790 had been handicapped by the dearth of labor and capital. It may have been checked somewhat by the colonial policy of the British government. The jealousy with which England guarded the new inventions of cotton manufacturing machinery retarded their introduction into America. Finally the Revolutionary War and the subsequent period of industrial instability also hindered the expansion of the industry. But these last three factors were obstacles of a secondary order in comparison with the fundamental economic conditions in regard to labor and capital.

After several ventures at different places in New England, the first successful cotton mill was started in Rhode Island in 1790. The owners of the mill secured the services of Samuel Slater, a young Englishman who had worked in a cotton mill

¹ W. B. Weedon, *Economic and Social History of New England*, vol. i, pp. 163, 170.

² *Ibid.*, p. 681.

³ A. M. Earle, *Home Life in Colonial Days*, p. 206.

manager in need of operatives would hesitate to reject the whole family merely because some of the children were young. But the whole family has not always worked, to judge by the statements of Mr. Thompson.¹ He pictures a large number of idle fathers, "tin-bucket toters" he calls them, who are supported by their children. These worthy personages lounge around the village loafing places and discourse upon the capabilities of their children, much as farmers gather at a country store to argue upon the relative merits of their cattle. This abuse does not prevail to the same extent today as in former years. That it should have arisen was not unnatural. The older men could not easily adapt themselves to tending machines and fell into the habit of depending on the women and children for support. They were poor and uneducated when they came to the mills, and they did not realize that it was more unhealthy for the women and children to work in a factory than to labor in the field.

These social conditions have been discussed not only because of their bearing upon the success of the cotton manufacturing industry in this section, but also on account of the wide attention that they have attracted.² While the evils have been numerous, it is an injustice to criticise too harshly. It must be remembered that long hours and child labor were once common in New England, and the latter evil has not yet been eradicated from the mills and factories in various northern states. The southern mill operatives are, as a rule, better off than before they entered the mills. And their dwellings and modes of living do not compare unfavorably with those in the tenement districts of New England mill towns. The mills are generally well lighted, well ventilated, and some are artificially cooled in summer.

¹ H. Thompson, *From Cotton Field to Cotton Mill*, p. 115; also E. G. Murphy, *The Present South*, p. 106; and *Report of the Industrial Commission*, vol. vii, pp. 545, 566.

² The magazine articles on this subject have been numerous. The following may be mentioned as presenting the subject from different points of view:— A. J. McKelway, *Annals of American Academy*, vol. xxvii, and *Outlook*, vol. lxxxv; M. A. Bacon, *Atlantic Monthly*, vol. xcix; A. W. Page, *World's Work*, vol. xiv; H. Robbins, *Gunton's Magazine*, vol. xxiii; D. A. Willey, *Chataouquan*, vol. xxviii.

The conditions in the South are not praiseworthy; yet in the North they are often nearly as bad. The pictures of southern child operatives in the popular magazines give an unfair impression. Let a photograph be taken of a dozen children emerging from a northern print-cloth mill, glass works, or silk factory, and how much more prepossessing an appearance would they present?

The school system has been inadequate and the regulations in regard to attendance lax, yet the children have received more education than if they had remained in the mountains or on the farms. While recognizing the abuses that still exist and appreciating the opportunities for betterment, my own impression is that the conditions in many southern mills, not all, are not inferior to those in northern mill centres. The outlook for the future is brightened by a wide-spread spirit of progress. The employers are by no means heartless. They are generally quite the reverse and take an active interest in uplifting their employees. The operatives themselves are slowly adopting higher standards, and improving their condition. Whether they are to use the cotton mill as a stepping-stone, or whether, because of ignorance and lack of thrift, they are to become a permanent operative class, remains to be seen.¹

These people, with limited wants and accustomed to inexpensive living, were employed at wages lower than were paid in New England. No statistics are available which can safely be used for an exact comparison of labor cost, but it has been sufficiently below that of the northern mills to stimulate a rapid increase in the number of spindles in the South.

The following table illustrates the difference in earnings in the two sections. It gives the computed full time earnings

¹ The conditions in the United States are gradually approaching the European standard, so that it is becoming more difficult for the mill operatives and other workmen of that class to raise themselves to a higher level. Yet the absence of social restrictions and firmly fixed customs as well as the promise of further industrial expansion in this country seem to afford sufficient opportunity for these people to emerge from their position as factory employees. To the author, the progress of the operatives appears to depend chiefly on their own efforts. The falling off in the proportion of women employed (see p. 114) may be an indication that they are not to become a permanent factory class.

In the first class, where the selling house has been the leader, we include the groups of mills controlled by several of the large selling houses of Boston and New York. An example of this is the recent formation of a syndicate by Deering, Milliken & Co., commission agents, for the purchase of the Garner Print Works in the state of New York, these works to be used for converting cloth produced in southern mills controlled by the selling house. Similarly, other large selling houses control many of the mills for which they act as agents. They do not always control a converting plant, but that is unnecessary in the case of mills which finish their own cloth, and which constitute a large proportion of the concerns employing selling agents.

The best illustration of the absorption of a selling house by the mills is the purchase of the Turner Company by the Consolidated Cotton Duck Company, to which reference has already been made. There are probably other instances, which have not been made public, where control of the selling house was secured as soon as the mills were strong enough financially.

The establishment of a private selling agency is well illustrated by the concern of B. B. & R. Knight of Providence. This company has four mills in Massachusetts, and thirteen mills, a print works, and a bleachery in Rhode Island. The head office is in Providence and has combined with it a selling department. The company controls more than 500,000 spindles and 12,000 looms. The greater part of the product is sheetings, especially fine sheetings, but shirtings, twills, and other fabrics are also manufactured in smaller quantities. The Fall River Iron Works and the American Printing company are largely owned by Mr. M. C. D. Borden, and within a year the selling of the product has been taken over by M. C. D. Borden & Sons, of New York. A similar example is furnished by the Sayles interests, which control the Lorraine Manufacturing Company and a bleachery and dye-works, and have their own selling office in New York. The Cannon Mills Company, also, has established an office in New York where it sells the product of its North Carolina mills.

This movement of integration has assumed more importance within the last five years. The causes are, in general, those which have stimulated combination in all parts of the industrial world, and in particular the necessity for perfecting the merchandizing organization, the desire of the selling house to justify its existence, and the narrowing of the margin between the cost of raw material and the selling price of the cloth. The fundamental cause, the one into which practically all of the others can be resolved, is keen competition arising from the increase in the size of the establishments and the growth of the cotton manufacturing industry in the South.

The narrowing of the margin between the cost of raw materials and the selling price of the product reflects the stress of the competition. Throughout the ten year period from 1896 to 1906 the margin, although fluctuating more or less, as the accompanying chart shows, was constantly below the lowest level hitherto reached. The method used in this chart for ascertaining the margin is that adopted in Fall River as the basis for fixing the sliding wage scale. It is the difference between the cost of eight pounds of middling cotton and the average selling price of forty-five yards of 28-inch, 64 x 64 print cloth and of thirty-three and eleven one-hundredths yards of 38½-inch, 64 x 64 print cloth.¹ While open to the criticism that may be directed against any average or index, it nevertheless seems to bear out the statement frequently made by manufacturers that the margin has been unusually low during the last ten years. Its upward leap in the year 1907 was due to the great boom preceding the panic. Although the data submitted cover only the period since 1881, one may safely say, in view of the reduction of the costs of production during that time, that previously the margin was never as low. This has stimulated the introduction of economies in manufacturing and in management, and has started this movement to economize in selling, either by direct sales or through closer relation of the selling agency to the manufacturing branch.

¹ Tables of prices are given in the appendix.

positions. The overseers are recruited from this class. But the majority of the operatives do not attend the schools, and the proportion seeking such education is less than in the New England cities where textile schools are available.

German textile education is primarily for the sons of mill owners, directors, merchants, and others who can afford to devote all their time to study, and the instruction is largely confined to day courses. Although there are a few evening schools, young men of promise sometimes enter the day courses of the textile schools after having worked several years in a mill, the expenses being paid from their savings or by their employers.

The courses for the day students in Germany are generally shorter than in America or England.¹ A few specific examples will make this clear. The textile school at Reutlingen, which averages 140 to 150 students per year, has a one year course in spinning, a one year course in weaving, a two year course in designing, and other supplementary courses of one year each. The M. Gladbach institution has a spinning course and a weaving course, each of one year's duration, and a finishing course for which two years are required. The Mülhausen Spinning and Weaving Schools each offer a one year course, the number of students in both averaging sixty. In other schools the courses are from three months to two years in length.

Technical education in France bears much resemblance to that of Germany. The schools in which textile courses are given have varying standards of requirements for admission. The National Technical School at Lille, in which the courses in spinning and weaving are of three years' duration, imposes a high standard. The Municipal Spinning and Weaving School in the same city is of lower grade. The National Professional School at Armentières, which has only a weaving department, trains boys who have been apprenticed to that trade. At St. Quentin and Amiens, technical schools with textile courses are supported by the local manufacturers' associations. That at Amiens is of long standing, having been established fifty-five years. Both of these institutions, unlike the others, hold

¹ The courses in spinning and weaving at Manchester are three years each.

classes in the evening as well as in the day. But the number of students is not large; there were thirty-five evening students in weaving at Amiens in 1911. At Epinal a branch of the Industrial School is devoted to spinning and weaving, but only day sessions are held. The number of students enrolled in this school in 1910 was twenty. Except for the evening schools, we may say that the object of the various institutions is to fit the students for positions as overseers or managers.

The contribution of the Continental textile schools is not to be belittled, yet one may suspect that too much credit is occasionally given to these institutions for the part they play in the development of the industry in their respective countries. The number of students attending the day classes is comparatively small, and the number of evening students still smaller.

The New England textile schools, in addition to the advanced work of the day classes, open opportunities for instruction to the immigrants and in that way improve their efficiency as laborers, and accomplish more perhaps for the operatives themselves than for the manufacturers. The English employers, likewise, benefit from the increase in the supply of men who can take responsible positions in the mills. Yet there again, it is the social significance which attracts particular attention. The ambitious youth, although he has to work all day in the mill, may materially improve his condition, provided he has sufficient mental capacity and enough energy. The evening textile school is a valuable means of economic and social advancement. But on the Continent it is only the very exceptional boy from the operative class, who can make use of the trade school. The bulk of the operatives cannot improve their condition in that way, and social barriers are thereby kept more impregnable. In our own country the efforts of the textile schools should be heartily supported, if for no other reason than to give a better chance to those workmen who are willing to help themselves.

and from the outset many of them have been weak. The combination has practically a monopoly of mercerizing, and has an agreement with the Fine Spinners' Association whereby it does all their mercerizing work. But as with several of the other combinations, little benefit has accrued from what amounts to an increase in the scale of production.

In Great Britain, as in the United States, the amalgamations in the cotton manufacturing industry have been confined to special branches, and have not affected the ordinary spinning and weaving trade. As Macrosty has said, "It is in the derivative and not in the primary industries that we find combination attempted."¹ These English combinations were formed at about the same time as those in the American cotton manufacturing industry. With the exception of the Coats concern and the Fine Cotton Spinners' and Doublers' Association, there have been occasional reorganizations. As a rule, neither appreciable economies nor effective monopoly have been realized. This is similar to the experience of the duck and yarn combinations in the United States. The small units were fairly well managed, and in the case of the English combinations in the finishing processes it was found difficult to organize them effectively on the large scale demanded by their extent. A loose association of separate concerns secured as good results and avoided many of the difficulties. The necessity of including weak firms in a merger of these extensive trades impaired the efficiency of the combinations, and the overcapitalization is a burden which may yet prove too heavy. These experiences emphasize the difficulties which would attend any attempt at wholesale amalgamation of the spinning or weaving business in the English or American cotton manufacturing industry.

There have been sporadic instances of integration in the English cotton industry, but chiefly in connection with amalgamations. The most prominent are the Central Thread Agency of the thread combination, the inclusion of merchants in the Calico Printers' Association, and the acquisition of collieries by Coats, the Fine Cotton Spinners, and the Calico

¹ H. W. Macrosty, *op. cit.*, p. 121.

Printers. Rylands & Sons combine spinning, weaving, bleaching, dyeing, and finishing with the manufacture of clothing, corsets, oil cloth, etc., and carry on a large foreign and domestic wholesale trade. But that is a unique concern, and, taking the English industry as a whole, the movement has, up to the present time, been toward specialization rather than integration.

In the Continental countries, where a relatively smaller scale of production predominates, the associations meet all the needs of the situation. Through them the manufacturers can secure whatever harmony of action is necessary. When the units are comparatively small and widely scattered, competition does not reach the combining stage.

CHAPTER XXIV

CONCLUSIONS

THE advance of the cotton manufacturing industry in the United States, as well as in European countries, has been rapid during the last half century. The period has been one of great industrial and commercial expansion under the influence of world-wide forces. In spite of numerous years of depression, it has been a period of great prosperity. Notwithstanding high protective tariffs, it has been an era of voluminous international trade. Improvements in means of transportation and communication have fostered commerce and widened markets. Yet within each country peculiar economic conditions have been encountered, and to these the cotton manufacturing industry had to be adapted. Consequently the history of that industry is primarily a study of adaptation.

In the United States the economic conditions have been continually changing; hence the industry has been almost constantly in a state of transition. This has been manifested most clearly, perhaps, in the progress of the industry in the southern states, and the reaction upon the older manufacturing sections. But taking the country as a whole, the problem to which the manufacturers have had to devote the greatest attention has been the reduction of labor cost. Face to face with a high wage level in all industries, the owners of cotton mills have been forced to find means whereby they could employ as little labor and as cheap labor as possible, and yet assure the workmen of an income sufficiently high to induce them to accept the employment. To economize in quantity of labor the manufacturers have adopted new types of machinery and automatic devices of various sorts which necessitated the minimum of attention from the operatives. To utilize the cheapest labor, the immigrants, those mechanical appliances which required the least skill on the part of the workmen were introduced.

The relatively high cost for labor has been partially counterbalanced and the burden of the overhead expense lightened by the enlargement of the scale of production and the standardization of product. The limits to which the former can profitably be carried at the present time are indicated by the poor success of the combinations of competing firms. The integration of coördinate branches, except spinning and weaving, has as yet not progressed far.

The success of the industry as a whole has also been dependent upon the entrepreneur ability of the men who have been responsible for its direction. The influence of efficiency in plant organization and factory management is most plainly shown in the relative prosperity of the individual companies. Practically every type of machine that has been invented is available to each manufacturer, since the acceptance of new inventions depends upon the appreciation of the benefits to be derived therefrom. But systems of organization are less tangible, more personal, and therefore more heterogeneous. Although no less fundamental than proper technical equipment, particularly in large scale enterprises, first class managing ability is less easily obtained.

The cotton goods manufactured in the United States up to the present time have been destined principally for the domestic market. That market has been constantly expanding, yet it has been fairly homogeneous. The methods of selling have been adjusted to the amount of financial assistance needed by the manufacturers, the length of credit required by the customers, and the difficulties in securing the orders for the cloth. As the market has become more diversified, a new middleman, the merchant-converter, who assumes the risk in the selection of finish and design, has arisen. The export trade, in the meanwhile, has not received consistent attention and the special arrangements necessary for carrying on such business have not been fully developed.

The growth of the export trade depends upon the power of the American industry to meet its European competitors in neutral markets. The American manufacturers are not espe-

