

STRATEGY AND STRUCTURE OF COTTON AND STEEL ENTERPRISES IN BRITAIN, 1900-1939*

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Introduction

Needless to say, cotton and steel are representative of the old industries in Britain this century, and up till now it has been generally argued that their performance during this period has been rather poor, which I think can not be denied at least from the overall national point of view. However, when the analysis is done using materials concerning individual enterprises, their performances prove to have varied markedly from each other, but at the same time, to also have demonstrated a common characteristic strategy on an industry-wide basis.

In the following study attention is to be paid to tracing strategies and structures in several individual enterprises in some detail, and also to obtain a general idea of the two industries' strategies and structures. Emphasis will be put upon the period from the early 1900's to the late 1930's partly because some work has already been done dealing with the period prior to the turn of the nineteenth century, but largely because I have access to original materials dated only after that time.¹

In the cotton textile industry six companies were selected, all of which appear in a table listing the largest British industrial companies in 1905 (Courtaulds is excluded)² compiled by Professor P.L. Payne.³ In the case of the iron and steel industry the selection of companies is rather arbitrary. Firms commonly called iron and steel companies carried out a broad range of mining and manufacturing activities, and the variations in their range of products were very remarkable. There appear seven companies in the table mentioned above, three of which were chosen along with two wellknown but not so large companies considering their range of activity.⁴

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¹ The printed records I use in this study are, in the main, *The Times* and *The Statist*.

² Courtaulds is excluded not only because of its no connection with cotton, but also because Professor D.C. Coleman published excellent books as to the history of Courtaulds, and I refer to this company in the conclusion of this paper.

³ P.L. Payne, *The Emergence of the Large-scale Company in Great Britain, 1870-1914*, *Ec. H. R.*, 2nd ser., xx, pp. 539-40.

⁴ Among all of the largest 52 companies listed in the table, there were nine iron and steel companies. As for these companies, Vickers, Armstrong and William Beardmore are excluded because they had too close connection with the munition industry to argue in this study. The development of Bolckow was quite similar to that of Dorman, and Dorman amalgamated with it in 1929 as mentioned below. Likewise, the Cammell's history resembles the John Brown's. Pearson and Wigan Coal were also amalgamated which I state afterwards.

*Organisation of the Cotton Textile Industry*⁵

The cotton textile was a strongly export-oriented industry, and at its peak on the eve of World War I more than 80% of its output was exported to overseas markets, capturing 65% of the international cotton trade. During the war when British cotton companies resigned themselves to some unfavourable conditions, the developing countries, especially Japan and India, moved to secure their home markets. As a result, their output continued rapidly to increase and grew competitive to a great extent by reason of the use of cheaper cotton and lower labour costs. The decreasing output of British cotton textiles was such that it amounted to less than half the pre-war level by 1938 (see Table 1). Parallel with diminishing exports, markets for British cotton textiles also changed during this period as indicated in Table 2.

However the point of importance is the remarkable difference as to the rate of decrease between the main four kinds of exported cloth as can be seen from Table 3. It was grey cloth that received the continuing damage for British cotton trade throughout the period. On the other hand, exports of printed and bleached cloths, especially dyed cloth remained relatively stable at a comparatively high level during the 'twenties after the drastic decrease of 1920-21.

As often said, the British cotton industry was characteristic of a high degree of specialisation in its functions, which had gradually evolved in the course of the growing activity of the industry. It was at this point that it showed a striking contrast when compared with the Japanese. There appeared some vertical integrations only to a very limited extent. So, usually there were six sorts of independent persons engaged in the industry: the cotton.

TABLE 1. PRODUCTION AND EXPORTS OF COTTON
TEXTILES, 1912-38

	(mn sq. yd.)			
	Yarn (mn lb)		Piece Goods	
	Production	Exports	Production	Exports
1912	1,963	244	8,050	6,913
1924	1,395	163	6,046	4,445
1930	1,048	137	3,500	2,472
1937	1,375	159	4,288	1,922
1938	1,070	123	3,126	1,494

Source: G.C. Allen, *British Industries and Their Organization* (3rd ed. 1951), pp. 196, 223.

⁵ As for this subject, many scholars have referred. My following statement is a mere rough outline of what is related to my study. I am above all indebted to wellknown *Survey of Textile Industries* (1928) and G.C. Allen's *British Industries and Their Organization* (1933). The post-war works are following: S. Pollard, *The Development of the British Economy, 1914-1950*, 1962; D.H. Aldcroft (ed.), *The Development of British Industry and Foreign Competition, 1875-1914*, 1968; D.H. Aldcroft, *Inter-war Economy, 1913-1939*, 1970; B.W.E. Alford, *Depression and Recovery? British Economic Growth, 1918-1939*, 1972.

TABLE 2. BRITISH EXPORTS OF COTTON PIECE GOODS TO GROUPS OF MARKETS
(Million square yards)

	1909-13*	1929	1931	1933	1935	1936	1937	1938
Total	6476	3672	1716	2031	1949	1917	1922	1387
India	2507	1374	390	486	543	416	356	293
Dominions	382	340	258	384	389	405	450	390
Quota Colonies†	322	266	143	171	275	310	301	155
Twelve Trade Agreement Countries‡	599	308	229	306	274	267	278	229
All other countries	2666	1384	696	684	468	517	537	319

* Million linear yards.

† The British Colonies in which quotas on imports of certain foreign textiles were imposed in 1934.

‡ Norway, Sweden, Denmark, Finland, Latvia, Lithuania, Yugoslavia, Poland, Turkey, Argentina, Uruguay, Peru.

Source: R. Robson, *The Cotton Industry in Britain*, 1957, p. 11.

TABLE 3. BRITISH EXPORTS OF COTTON PIECE GOODS TO GROUPS OF VARIETIES
(m. £)

Yearly Average	Grey Cloth	Bleached Cloth	Printed Cloth	Dyed Cloth
1910-13	2,164	1,889	1,259	1,081
1920-24	1,174	1,292	776	795
1925-29	1,151	1,355	622	779
1930-34	397	773	340	507
1935-28	299	551	378	466

Source: Calculated from *Survey of Textile Industries* and *Statistical Abstract for U.K.*

importers and brokers, the spinners, the yarn merchants and brokers, the weavers or manufacturers, the finishing trades and the piece-goods merchants. Furthermore, the companies engaged in manufacturing or merchandising were inclined to specialise in certain kinds of products, and in the case of marketing, merchants were separated into several groups according to their export areas.

Entrepreneurs in the cotton industry seem to have believed in 'industrial individualism'. They used to be actively opposed to state intervention up to the 'thirties. Some federations were organised to push for their common interests in the 'twenties, but their efforts were never satisfactory. In the course of the depressed years of the 'thirties, entrepreneurial attitude became favourable to state intervention, to the extent that it was considered desirable for the government to have some degree of control over working conditions and to exercise a restraining influence over excess production.

*J. & P. Coats and English Sewing Cotton*⁶

J. & P. Coats originated in a small mill in Paisley near Glasgow in 1826 and, after

⁶ In this study I owe much of my description as to the period prior to 1906 to H.W. Macrosty's *The Trust Movement in British Industry*.

absorbing four rival firms in 1895-6, grew to be one of the earliest and most successful world enterprises by the beginning of the twentieth century. Previous to a capital increase in 1919, a splendid dividend of 30-35% was paid during the prosperous years by controlling more than 80% of the market share of cotton thread in Britain and trading 80% of the group's products in foreign countries.⁷

Its management appears to have been centralised considering the process of its emergence. Two prominent aspects regarding management strategy, overseas investment and control of marketing, should be noticed for this successful period. The overseas investment had its origin when the company secured works in Rhode Island soon after the beginning of the great depression. Thus, by means of possessing thirteen mills in Russia and other countries in following years, the company could state 'by far the larger part of the company's profit is now (1899) derived from the shares in foreign manufacturing companies'.⁸ This management policy was energetically pursued up to the second half of 1930's in spite of the loss of the Petrograd mill as a result of the Russian Revolution, because the gap in product costs tended to grow wide. In consequence of this policy, the company had more than fifty separate mills all over the world in 1930, and so 'the position abroad is stronger than it has ever been'.⁹

Obviously different from other cotton textile companies, J. & P. Coats had marketing power. 'What the "Combine" has done has been to destroy the business of the middlemen—All these smaller dealers and consumers can now buy direct from the Central Agency'¹⁰ which was its marketing subsidiary. This was no doubt one source of the company's huge trading profits. On the other hand, the reason why it did not participate in organising the spinning section is not difficult to understand. The section of fine cotton spinning was highly competitive at the end of the nineteenth century, which resulted at last in the emergence of the Fine Cotton Spinners' and Doublers' Association in 1898. So it was reasonable for J. & P. Coats to have placed substantial contracts in competitive markets. The company did not miss the opportunity of being connected with the association by means of acquiring 200,000 ordinary shares at the time of the amalgamation, and consequently the bulk of the company's orders went to this association.¹¹

It may be difficult to describe the development of managerial organisation using printed materials, but, as stated above, centralised management can, I think, be inferred from the process of the company's growth. Even in the years following the absorption of rival firms the Coats almost entirely controlled the board which consisted of eighteen directors,¹² and at the same time held about 50% of the shares.¹³

The changing business situation in cotton thread trade seems to have already been observed by the second half of the 'twenties. T. Glen-Coats, chairman of the company, said in 1928 'household sewing—is becoming a lost art'¹⁴ and reference was made to

⁷ *The Times*, August 27, 1920.

⁸ H.W. Macrosty, *op. cit.*, p. 128.

⁹ Annual Meeting for 1929-30 (*The Statist*, June 14, 1930, p. 1157).

¹⁰ H.W. Macrosty, *op. cit.*, pp. 128-9.

¹¹ *The Times*, December 1, 1911.

¹² This conclusion derived itself from my compilation of *The Stock Exchange Official Intelligence*, 1900-1937.

¹³ *The Times*, November 7; December 12, 1913.

¹⁴ Annual Meeting for 1926-27 (*The Statist*, June 11, 1927, p. 1131)

the fact that the company was constantly on the outlook for new sources of business and was bringing out new articles whenever possible. The results of this policy of diversification, however, were limited. The only newly developed field was in fancy products, that is, cloth embroidered with various coloured threads. The company, instead, took a passive attitude towards artificial silk.

In a year or so after J. O. M. Clark was promoted as the first chairman not connected with the Coats, he adopted a policy of managerial decentralisation. Too much detail work had been concentrated in Glasgow. A separate operating company, United Thread Mills, was formed to unite all of the mills in Paisley and England.¹⁵ In consequence of this reform, J. & P. Coats came to be a pure holding company in 1931. Moreover, the influence of the Coats seems to have diminished during the 'thirties.

In the case of the English Sewing Cotton Company, its departure was different from J. & P. Coats in the fact that fourteen defensive firms were amalgamated immediately after the formation of the Coats group. But at the same time it should be noted that J. & P. Coats took up £200,000 of the ordinary shares so that the management of the company was and continued to be under the influence of J. & P. Coats.

The company was reorganised in 1902 as a result of over-capitalisation and loss of management control. Then, O. E. Philippi, director of J. & P. Coats was appointed chairman for the reorganisation committee.¹⁶ Judging from the fact that the company could continue paying a dividend of no less than 10%, the management seems to have successfully centralised into a small board, from which old vendors were largely excluded. The company was also similar to J. & P. Coats in that the larger part of the company's profits depended upon its overseas subsidiaries, above all the American Thread Company in the formation of which the company actively participated and made its control stronger through increasing its holdings of ordinary shares.¹⁷

Fine Cotton Spinners' and Dublers' Association

Originating in the merger of thirty-one firms in 1898, the association came to be the only large company in the spinning section of the cotton industry. The original aims of the amalgamation were the following: cessation of unnecessary competition, centralisation of office work of buying, selling and distributing, specialisation of mills, etc. The association seems to have been substantially successful in that the dividend expected in the prospectus—8.5%—continued to have been realised up to the world depression.

In the period following the prosperous years of 1910's when new mills were being built and consequently the cotton price was rising, over-production resulted in severe competition and price cutting. Then the management geared to vertical combination by means of establishing cotton plantation in the U.S.A. which, however, was a difficult venture considering that it took a very long time to begin to earn profits.¹⁸ The association did

¹⁵ Annual Meeting for 1930-31 (*The Statist*, June 13, 1931, p. 1061)

¹⁶ H.W. Macrosty, *op. cit.*, p. 135.

¹⁷ *The Times*, July 10, 1913. The company had the whole of the American Thread Company's ordinary shares by 1913.

¹⁸ Annual Meeting for 1910-11 (*The Statist*, May 27, 1911, p. 682)

not intrude into the weaving section, perhaps because of the natural defensiveness of its managerial attitude.¹⁹ It was thought wiser to make the restraint of competition in the spinning section stronger. So the policy of buying up newcomers was continued during the 'twenties. Besides that, the association seems to have given great consideration to its marketing policy from an early time. The commercial part of the association was regarded as being the most important. H.W. Lee, the most influential man over the period, took part in marketing activities before being appointed managing director. The method of advertisement during the 'twenties was unique in that emphasis was often placed on 'personal visits to the principal users of yarn in every market of the world',²⁰ keeping away from mass advertisement by means of newspapers. The association began spinning materials other than cotton degrees in the 'thirties. 'Our efforts to make our name known to the public in connection with specialities are beginning to bear fruit',²¹

Thanks to long and well-reported annual meetings, it is possible to make the organisational development clear. The organisation went through a process of evolution not revolution. This organisation building was influenced by and in turn exerted an influence on other similar associations mentioned below. The association had a large board with about twenty directors composed originally of vendors of associated firms, and, later on, sons and relatives of former directors. A further step was that directors were promoted from departmental managers, that is, heads of departments after World War I.²² Many of the directors seem, however, to have been promoted by reason of long experience in their mills.²³ Even after being promoted to directors, mill managers retained responsibility for a mill or group of mills and usually were re-elected for long periods of time.

It was emphasised on some annual meeting that '*entente cordiale* between the executive and the board is, perhaps somewhat unique'.²⁴ It was the efficient executive board that successfully kept in check the tendency towards becoming a mere aggregation of individual firms. According to the annual meeting in 1923 'this Association is conducted almost entirely by the executive board'²⁵ consisting of chairman, vice-chairman, managing directors and two directors who were at the same time respectively heads of departments. The following departments were set up in succeeding years: yarn, merchanting, statistical, research, welfare, etc., but it is difficult to date their formation with strict accuracy. Besides these functions, the association had some consultive committees. After 1933 when W. Howarth, managing director died, 'an experiment' was carried on. The post remained vacant and executives worked 'as a committee, each member having equal voice in its deliberation',²⁶ but this only expressed the concentrated managerial power of H.W. Lee, the influential chairman.

¹⁹ It seems to be quite a debatable question, and so I will argue later on.

²⁰ Annual Meeting for 1928-29 (*The Statist*, June 1, 1929, p. 1084)

²¹ Annual Meeting for 1936-37 (*The Statist*, June 5, 1937, p. 906)

²² Chairman talked of this subject in some detail at the annual meeting in 1921 (*The Statist*, May 28, 1921, p. 1029)

²³ There was usually enthusiastic support for a director who was promoted from mill managers at annual meetings.

²⁴ Annual Meetings for 1911-12, and 1913-14 (*The Statist*, June 1, 1912, p. 653; May 30, 1914, p. 722)

²⁵ Annual Meeting for 1922-23 (*The Statist*, June 2, 1923, p. 1018)

²⁶ Annual Meeting for 1932-33 (*The Statist*, June 3, 1933, p. 934)

Other Three Associations

These three associations were formed one after another in 1898-1900, and all engaged in the last manufacturing stages of the textile industry.

Bradford Dyers' Association, dated from 1898, consisted of twenty-two merged firms and controlled 90% of the market share of the Bradford piece-dyeing trade, which was based on commissions. At the same time, it was planned to keep each original firm independent by means of paying a reward on the profit to the individual branches. A managerial policy of absorbing other firms, including negotiations with the Bleachers' Association in order to transfer a dyeing section owned by the latter, and establishing a community of interest with the British Cotton and Wool Dyers' Association, the next largest dyeing combine, was pursued. With the object of obtaining a cheap and steady supply of raw materials, the association held 50,000 shares of Bradford Coal Merchants' Association in 1899, and sent two directors to its board.²⁷ Following these measures, the next step was to found overseas mills over tariff walls in 1911-13, although some old works in Alsace were sold to a big company in France after the war.²⁸

Despite of the decreasing trend of exports in dyed cloth, which was not so drastic in the 1920's as mentioned before, the peak of trading results was reached in the first half of the 'twenties, probably because of the monopolistic position originated in the high market share and in the production of specialities, which was further supported by the Dyers' Federation. When other sections of the trade cast the blame of declining exports in dyed cloth on it, the association in turn accused the merchants engaged in the cotton piece-trade of the fact that it had made considerable reduction in dyeing pieces with the expectation of stimulating trade but it had not come true and large percentages had been expended in the commercial distribution almost without comment. G. Douglas, chairman and managing director talked openly in 1929 of 'the advantages of the vertical combine, which aims at cutting out the cost of marketing at each stage and ensuring continuous full occupation'.²⁹ Outspoken censure of merchants seems to have been heard in this section of the cotton industry in the course of the second half of the 'twenties.

With the coming of the world depression profits were reduced to much less than half the pre-depression level and during the 1930's they never recovered from their depressed condition. We had better think that the world depression merely accelerated an already existing trend in the cotton industry which had in truth originated in foreign competition, above all competition with the Japanese. Both rather superficial policies of speciality development (very small contribution to total earnings)³⁰ and overseas investment could not, as supposed, check this trend.³¹

The organisational development of the association displayed some discernible stages of growth. After merger, the board was composed of two managing directors and about

²⁷ H.W. Macrosty, *op. cit.*, p. 158.

²⁸ Annual Meetings for 1910 and 1919 (*The Statist*, March 4, 1911, p. 462; February 28, 1920, p. 429)

²⁹ Annual Meeting for 1929 (*The Times*, March 1, 1929)

³⁰ 'Rigmel', a shrinkage proof product was developed. Annual Meeting for 1933 (*The Times*, March 1, 1934)

³¹ A works was erected in Egypt in 1937. Annual Meeting for 1937 (*The Times*, March 1, 1938)

twenty other directors, a rather loose organisation from the point of efficient management. Nevertheless, some departments of central buying, selling and research, etc. were soon institutionalised, and the central office dealt with workman's compensation, insurance, banking and patents.³²

In succeeding years, the board's business for administrative purposes was divided into sections in the operation of which the managing directors had the assistance of other directors. It worked very well. This system became so formalised by 1910 that those directors assisting the managing directors during the time were appointed to an executive committee acting under and assisting only one managing director, whose chief function was to maintain a constant general policy throughout.³³ In the course of the following twenty years it did not appear to carry out any reforms of any great importance, but in 1932 the executive board tried to strengthen its management function by means of adding four directors to oversee the central management of the business.³⁴

The last follower of the three was Bleachers' Association. This firm resulted from a merger of fifty-three bleaching firms in 1900, many of which were centered in Manchester. The association's business was the bleaching and finishing of only cotton piece-goods, not other textile cloths. The initial board was composed of forty-nine directors, almost all of whom continued to work at their mills as branch managers. Two joint managing directors were responsible for overall management policy. In addition to a lack of consistent policy which resulted from the loose managerial organisation, over-capitalisation at the time of the formation led to a reorganisation in 1904. Management was concentrated in a small number of directors who made up the board of management.³⁵ Nevertheless, the undue caution against concentration was so notable that in order to prevent it 'the association had, instead of concentrating its account at the head office, left the accounts of each works to be dealt with by each works, thus necessitating separate audits at each place'.³⁶

The remarkable policy after the amalgamation up to World War I was merely buying up rival companies, while at the same time closing down several inefficient works. I can not find out the policies of both overseas investment and vertical integration, and in this point Bleachers' Association was notably different from Bradford Dyers' Association. The war brought Bleachers' Association handsome profits through the production of materials necessary to the manufacture of propulsive powder.

In the years following the war, the association attained the prime of trading profits for the reason of its dominant market share and its consistent policy of consolidation. So the drastic post-war decline of exports in bleached cloth did not hit it so hard and it was from the world depression that the profits suffered drastically from the shrunken demand in foreign countries. The only effective policy taken by the association against this adversity was the more drastic consolidation; closing down old established works and taking over small firms in company with small organisational improvements. The association, however, seems to have thought the future depended upon factors almost entirely beyond its control. Some minor technical improvements were put to practical use, and in connec-

³² H.W. Macrosty, *op. cit.*, p. 159.

³³ Annual Meeting for 1908 (*The Statist*, May 29, 1909, p. 1141)

³⁴ Annual Meeting for 1931 (*The Times*, March 1, 1932)

³⁵ H.W. Macrosty, *op. cit.*, p. 143.

³⁶ Annual Meeting for 1908-9 (*The Statist*, May 29, 1909, p. 1141)

tion with these an extensive campaign of advertising was tried but with little influence upon the trend of falling demand.³⁷ On the eve of World War II a new line of policy, the production of chemical cotton was carried out by the association in conjunction with Hercules Powder Company of the U.S.A.³⁸

Calico Printers' Association was the largest among four associations stated above and represented 'the highest development in British trade of the policy of amalgamation', but, at the same time, it was sometimes emphasised that calico printing was an art, which seems to make this section of the cotton trade unique and to require special consideration with respect to its analysis.³⁹

The association was originally formed in 1899 through the merger of fifty-nine firms engaged largely in calico printing, but it should be noted that some of the firms were merchant firms and some also carried on spinning and weaving besides printing. It is wellknown that the association fell short of its initial expectations and a reorganisation mentioned below took place in 1902 in accordance with the 'new scheme of management' drawn up by the Investigation Committee, two members of which were respectively sent from J. & P. Coats and the Belachers' Association.

Exports of printed piece-goods attained their peak in the years prior to World War I, but the association seems to have maintained a satisfactory market share—55.45% of the whole trade in spite of its declining performance up to 1938.⁴⁰ Competition was keen even before the war because fashions exerted a considerable influence upon profit margin, scale economy was comparatively small in this section, and research and development advantageous to large firms was yet to come. Moreover, the efficiency expected from a policy of managerial concentration had not been achieved even a decade after the reorganisation, judging from the fact that the policy of handling all orders at the head office had proved to be a failure in 1913-14.⁴¹

The drastic fall and the continued decreasing trend in exports of printed cloth after 1920 would have been more damaging to the association without the price agreement which had followed the formation of the Federation of Calico Printers. Year by year from 1928 on the price fixing system was apt to break to pieces in reference to contracting sales so that the profit margin began to show a sudden decrease, and never recovered during the 'thirties.

Some measures, it seems, were taken to meet this situation. An immediate step was to intensify the policy of consolidation. Thus, only eleven mills were working in 1938 and nineteen mills were closed during the years following 1923. The competition within the association was eliminated to the extent that each of the mills had some specialities supplementary to the other mills.⁴² More notable was investment in developing countries. It was in China, followed sometime later by Egypt and India that vertical undertaking con-

³⁷ The process of sanforising against shrinkage was developed in 1934 and another process was produced in 1937 under the name of 'Bleapel', a product resistant to spots and stains. (*The Statist*, June 27, 1936, p. 1099; July 2, 1938, p. 29)

³⁸ Annual Meeting for 1937-38 (*Ibid.*)

³⁹ This applies for all finishing sections to some extent, but above all for printing section.

⁴⁰ P.L. Cook, Calico Printing Industry in P.L. Cook (ed.) in *Effects of Mergers*, 1958, pp. 179-80.

⁴¹ P.L. Cook, *op. cit.*, pp. 173-4. But, the chairman said in 1913 that much greater efficiency has resulted from the centralising of warehouses and administration, for explaining the increasing profits, and so this policy seems to have met so strong a reaction that the disorganisation resulted from it and it made the payment of dividend impossible in 1914. (*The Times*, August 14 and 23, 1913).

⁴² P.L. Cook, *op. cit.*, pp. 190-1.

taining spinning, weaving, printing, bleaching and dyeing was set up in 1927.⁴³

The most controversial question throughout the period considered was the method of marketing. Continual complaints seem to have been made to merchants, at whose mercy the calico printers were apt to be during depressed years. It was also argued that mass production in cotton industry was made possible only by vertical integration including marketing because there was no guarantee that the reduced margins of the printers had any effect in increasing trade. As a matter of fact, the more difficult it became for the merchant to secure business, the more he desired an exclusive production which cost the association too much through increasing the number of designs.⁴⁴ Nevertheless, as shown by chairman's statement in 1937 that marketing was 'the crux of the whole question', this remained unsolved throughout the 'thirties.⁴⁵

Judging from the reports of annual meetings, there seem to have been no important changes in its managerial organisation from 1902 to 1939. As often said, the fundamental goal in reference to reorganisation was that the association was 'one concern consisting of a number of component parts, which would be controlled by a Central Authority'.⁴⁶ In order to attain this goal three kinds of bodies with well-defined functions were formed. These were a board composed of six to eight directors, an executive with two to four directors and seven advisory committees. On the other hand the most interesting point is that the Committee failed in devising a suitable method to 'prevent (branch manager's) indifference and lethargy gaining ground' so that it was forced to insist on 'payment by results'.⁴⁷ The new managerial structure devised by the Committee seems to have been carried out with zeal because an enthusiastistic reformer, L.B. Lee remained chairman of the association during 1908-1937.

It is more difficult to trace the development of departmental organisation in printed materials than in the case of Fine Cotton Spinners' and Doublers' Association. Nevertheless, it would be safe to say that several departments were institutionalised during the period, as, at least, a Traffic Department certainly existed.

Organisation of Steel Industry

There have been many elaborate arguments as to the progress of British iron and steel industry,⁴⁸ but what is needed here is a mere outline of the period.⁴⁹

It is wellknown that with the advent of the steel age in place of the wrought-iron age British supremacy in the iron and steel industry came to an end. In the boom years of 1871-3 over 6.5 m.t. of pig iron, about half the output of the world was produced in Britain,

⁴³ Annual Meeting for 1933-34 (*The Times*, September 20, 1934)

⁴⁴ Annual Meetings for 1925-26, 1927-28, 1928-29, 1933-34 (*The Times*, September 17, 1925; September 16, 1926; September 15, 1927; September 21, 1928; September 20, 1929; September 20, 1934)

⁴⁵ Annual Meeting, for 1936-37 (*The Times*, September 16, 1937)

⁴⁶ H.W. Macrosty, *op. cit.*, p. 150; P.L. Cook, *op. cit.*, p. 163.

⁴⁷ P.L. Cook, *op. cit.*, pp. 164-5.

⁴⁸ L.D. Burn, *The Economic History of Steel Making, 1867-1939*, 1940; T.H. Burham and G.O. Hoskins, *Iron and Steel in Britain, 1870-1930*, 1943. The most recently published book is D.N. McCloskey's *Economic Maturity and Entrepreneurial Decline, British Iron and Steel, 1870-1913*, 1973.

⁴⁹ I am greatly indebted to the above-mentioned book written by G.C. Allen.

and in 1880 the value of exports amounted to twice that of the combined exports of the U.S.A., France and Germany. Its comparative decline in the world was from then on all the more astonishing. By the eve of World War I Britain had already come to be the largest importer and, furthermore, British imports of iron and steel rose from 1.8 m.t. to 2.9 m.t. up to the year prior to the world depression, while showing a slight decline in exports

OUTPUT OF PIG IRON ACCORDING TO QUALITY

(in thousands of tons)

Yearly Average	Hematite	Basic	Foundry & Forge	Blast Furnace Ferro-Alloys	Total
1900-01	3660	965	3750	264	8639
1905-09	3829	1399	4164	307	9699
1910-14	3540	2019	3635	300	9195
1915-19	3573	2530	2328	257	8730
1920-24	2026	1960	1818	200	6060
1925-29	1933	2162	1726	148	6042
1930-34	1228	2052	1336	78	4729
1935-38	1636	4045	1529	134	7350

OUTPUT OF STEEL INGOTS AND CASTINGS BY PROCESS

Yearly Average	Open Hearth		Bessimer		Electric		Other	Total
	Acid	Basic	Acid	Basic	Ingots	Castings		
1900-04	2736	445	1195	579				4955
1905-90	3030	1175	1200	590				5995
1910-14	3401	2097	971	558				7026
1915-19	3967	3443	780	191	55	19	184	8938
1920-24	2651	4166	382	174	34	23	41	8544
1925-29	2062	5020	438	6	47	26	48	7647
1930-34	1483	4923	195		43	28	61	6733
1935-38	2004	8387	214	349	125	50	128	11257

IRON AND STEEL

Yearly Average	Exports	Imports
1900-04	3430	1090
1905-09	4502	1164
1910-14	4579	1793
1915-19	2540	658
1920-24	3303	1476
1925-29	3911	3317
1930-34	2240	1937
1935-38	2293	1503

Source: Calculated from B.R. Mitchell and P. Deane, *Abstract of British Historical Statistics*.

from 4.7 m.t. to 4.3 m.t. One of the reasons was, of course, that these countries had a vast home market protected by tariff walls,⁵⁰ which made possible 'dumping' in overseas markets. Moreover, in company with the increasing use of scrap in steelmaking the proportion of scrap for steel furnaces rose more than 50% in the 'twenties and thereafter never declined. Consequently a large excess capacity of pig iron remained.

This loss in world leadership of the British iron and steel industry was also connected with positive and negative attitudes on the part of Continental Europe and Britain respectively towards technological innovations. It was argued that British entrepreneurs generally were hesitant about adapting to technological advances in steel making. With the diffusion of the basic process at the turn of the century, Germany and Belgium became large steel making countries by means of using abundant phosphoric ores. The British steel industry did not follow the same course, but instead continued sticking to the acid open-hearth process largely because, as one scholar argued, of customers' prejudice against basic steel.

Generally speaking so-called iron and steel enterprise covered a broad range of activities. In the last quarter of the 19th century some companies had already shown vertical combination to a considerable degree. But not only their locations but also their capital were not as concentrated as in the U.S.A. and Germany, and partly because of that, their scale in terms of capital, turnover, and marketing regions was much smaller than that of the U.S.A. and Germany. A remarkable fact in contrast with these foreign companies, moreover, was that British Companies had not held their control over the marketing process up to the war, although this appeared to some extent to be improved through the formation of selling associations in the course of the 'twenties and further, through the formation of the British Steel Export Association in 1930. On the other hand the British government pressed by the association took a step in 1932 towards the protection of home steel industry by setting up a tariff of 35% and raising it 50% in 1935. Remarkable recovery of production and improved trading results mentioned below during the second half of the 'thirties was, to a great degree, due to this protection.

Guest, Keen & Nettlefolds

A considerable part of Britain's coal and iron output was exported in the last quarter of the 19th century. The price and demand of both products were quite unstable with economic fluctuations. This was the basic reason why the trend towards vertical integration was observed as early as 1880s.

Guest, Keen & Nettlefolds was not only the most successful steel company during the period, but also one of the companies which had in its early stage finished its vertical combination to the highest degree. It originally came into being in 1900 through combining the businesses of Dowlais Iron Co., Guest & Co. and Patent Nut and Bolt Co. Likewise, Messrs. Nettlefolds was added to this combine two years later in order to lay restraints on competition, and, in consequence of this, trading results began to make steady progress.

⁵⁰ This is especially emphasised by P. Temin. Conf. P. Temin, *The Relative Decline of the British Steel Industry, 1880-1913* in H. Rosovsky (ed.), *Industrialization in Two Systems*, 1966.

On the eve of the war the company 'famous for an exceptionally cautious and conservative financial policy' accumulated around 1.5 m. £ in blue chips.⁵¹

The company entered upon a new stage of development after the war. It came to have a controlling interest during the depressed 'twenties in a number of reputable companies using its accumulated reserve, almost all of which were famous for producing specialities relatively contacted with consumers.⁵² The most excellent among these was John Laysaght & Co., the largest galvanised sheet maker in the world. This was derived from a policy that aimed at 'being self-contained in all available directions'.⁵³ Additions to its own properties since 1919 remained small up to the mid-'twenties, but investment in subsidiaries increased by more than twice the pre-war level during the period. It tended to be a holding company, proud of its astonishingly stable trading results, and it was said that the secret of its success was largely due to the fact that each of the subsidiaries occupied a leading position in its own sphere.⁵⁴ The trading results during the 'twenties were splendid in comparison with other iron and steel companies in Britain, but with the advent of the depression in 1929 the decreasing demand for the company's specialities and consequently fierce competition made it impossible in 1931 to continue the long-sustained dividend. Nevertheless, it was for only a short period and with the coming of protective tariffs the profit tended rapidly to increase.

The company was keeping its eye on overseas investments since the late 'twenties, which resulted in the building of several mills especially in the Empire. The policy of overseas investment might be considered one response to the new business situation⁵⁵ and another was the following organisational improvement.

It would be quite impossible to describe the organisational development with precision from scanty records. The company's board was composed of a small number of directors. Considering its composition, the board was sure to be under the strong influence of the Keens, one of the original founders of Patent Nut & Bolt Co. On the amalgamation of Nettlefolds, its four staffs were added to the board. With the expansion policy of 1920's the problem of co-ordination appeared to be of prime importance. Besides the pursuit of overall policy, in order to maintain the efficiency of day-to-day management, the executive committee decided to divide into two regional ones—one for dealing with the business of works in Midland and the other the business of the South Wales section of the company.⁵⁶

With the coming of the depression, a timely organisational improvement was instituted: both the coal and steel sections were separated and amalgamated with the same sections of other companies on the basis of the Welsh region. Thus, through the issue of a mortgage debenture Welsh Associated Collieries and British Iron & Steel Co. came into being in 1930, Guest, Keen & Nettlefold holding 25% and 50% of each company and

⁵¹ *The Statist*, August 19, 1911, p. 525; *The Statist*, August 12, 1914, p. 475.

⁵² Annual Meeting for 1919-20 (*The Times*, August 27, 1920)

⁵³ *Ibid.*

⁵⁴ *The Statist*, June 25, 1927, p. 1210.

⁵⁵ Annual Meeting for 1928-29 (*The Statist*, June 29, 1929, p. 1291)

⁵⁶ Annual Meeting for 1919-20 (*The Times*, August 27, 1920) Apart from this, Committee meetings composed of directors and managers for specific purposes seem to have been opened at various works. Conf. Annual Meeting for 1922-23 (*The Times*, June 29, 1923)

'transferring to reserve the capital profits arising from the two rationalisation scheme'.⁵⁷

Dorman, Long & Co.

The development of this company is wellknown from H.W. Macrosty's description.⁵⁸ To sum up, it dated from 1876 with the marking of bars and angles for shipbuilding. But it was in constructural works that it made its name known throughout Britain. Up to the end of 1890's the company's range of products was so limited that it was merely a steel-making company, and so a policy of both backwards and forwards combination was essential for the stability of profits. Backwards combination took the first step when it went into partnership with Bell Brothers in an experiment in the manufacture of steel from Cleveland ores by the open-hearth process. The success of this experiment resulted in the company holding 50% of the ordinary shares of Bell Brothers at the time of its conversion to a public company. Possessing coal and iron mines in Cleveland, the latter company had a capacity of producing more than 300,000 t. at the turn of the century, and was looking for stable outlets. A new capital issue made it possible to put its hand to producing finished steel for shipbuliding and other purposes. This co-operation became stronger by means of increasing holding shares by Dorman in 1902. Likewise, the company acquired the ordinary shares of North-Eastern Steel Co. producing rails in order to develop a wider range of products.

Much still remained to be done before this policy of balanced growth could be completed. Short of pig iron, the company bought up an old established iron-making company adjacent to its works in the 1910s.⁵⁹ At the same time, it launched into the making of black and galvanised sheets based on a policy of providing more advanced products, considering that only one-fourth of steel ingots consumed by its own works was for manufacturing girders, plates, sheets and wire, etc.

Actively responding to the government's demand during the war, the company took a positive policy of expansion, under which a new steel plant with the largest motor in the world was built. Thus, the company took pride in having the largest iron and steel making capacity in Britain right after the end of the war.⁶⁰ A.J. Dorman, chairman of the company, was a figure with an optimistic view of the future in remarkable contrast to A. Keen, who was always taking a pessimistic one.⁶¹ In retrospect over the period, this difference was crucial. With the advent of the post-war depression cheap scrap and semi-finished materials imported from European countries made the company's sections involved in the extraction of raw materials and making pig iron, a burden instead of a help. This was an entirely unexpected situation. Burdened with the increased capital of war-time the

⁵⁷ Annual Meeting for 1929-30 (*The Times*, June 26, 1930)

⁵⁸ H.W. Macrosty, *op. cit.*, pp. 127-31.

⁵⁹ It was impossible to raise £400,000 for building a new modernised mill, of which the chairman complained, and so, in place of it, the company had interest in Sir H. Samuelson and Co. Conf. Annual Meeting for 1910-11 (*The Statist*, December 9, 1911, p. 723)

⁶⁰ It had an yearly output capacity of 1,250,000 t. of pig iron and 1,000,000t. of steel. Annual Meeting for 1919-20 (*The Statist*, April 3, 1920, p. 652)

⁶¹ *The Statist*, August 21, 1915, p. 314; Annual Meeting for 1917-18, (*The Statist*, December 21, 1918, p. 1160)

company's profits were so reduced to the point that no dividend was paid from 1922 to the end of the 'thirties.

Immediate response to the depression was an organisational improvement in 1923. The amalgamation of allied companies was felt to be urgently necessary. Four large companies including Bell Brothers & Co. became operating parts of the group, and effective consolidation and co-ordination were realised.⁶² Moreover, a further minor improvement was to build up closer connections among each department, including the change of the headquarter's location. The next response was overseas investment. Confronting rising tariff walls, the chairman of the company said in 1928 'in an increasing degree we have had to recognize that these markets have become valuable for the purposes of investment rather than as means of absorbing a portion of the output of this country'.⁶³ In 1929 amalgamation with another famous large steel company of the North-East, the Bolckow, Vaughan & Co. was brought about in company with other organisational changes.

A prominent increase of trading activity resulted in reversing the declining trend of profits in 1934 but only as the result of protective tariffs. At the end of the 'thirties the company's consistent policy of intruding into more advanced stages was yet to come.

From the beginning of this century A.J. Dorman had been a driving force behind the company, remaining both as chairman and managing director until 1923. With the organisational improvement of 1923, A. Dorman, son of A.J. Dorman succeeded to managing director in place of his father. The amalgamation in 1929 added five new directors to the board. An additional vice-chairman and managing director were added along with three ordinary directors, one of the managing directors working in London. Moreover, 'as in the past, the majority of the board are taking an active part in the daily management of the company', and so the executive management was placed 'in the hands of a management committee composed of the principal officers of the company, who are responsible to the board'.⁶⁴ The committee's chairman seems, strange to say, to have been neither a director nor a manager judging from the scanty evidence available. Besides some general managers responsible for specific works, I found a commercial manager, and such departments as Bridge and Research, though their headquarters were separately located. These appointments might be regarded as indicating a kind of decentralisation policy.

John Brown & Co.

The rise and development of the steel industry before World War II had, generally speaking, something to do with the munitions industry. This was the case with John Brown & Co. to a good, but not probably so large extent as Armstrong & Whitworth and Co.

The company dated from the middle of the nineteenth century. Introducing Bessemer converters in its early days, it became the largest steel-rail maker in Britain. Moreover, by means of buying coal-mines in 1870 with the capacity soon of producing 1 m.t. yearly

⁶² Annual Meeting for 1922-23 (*The Statist*, December 29, 1923, p. 1097)

⁶³ Annual Meeting for 1927-28 (*The Statist*, December 22, 1928, p. 1156)

⁶⁴ Annual Meetings for 1928-29, 1930-31 (*The Statist*, December 21, 1929, p. 1085. *The Times*, December 18, 1930)

and a shipbuilding company in Clydebank near Glasgow in 1899, the companies engaged in a wide range of activities, from extracting coal to making finished products of high quality, probably containing iron-making section.⁶⁵ In 1907 the company reinforced its shipbuilding section through obtaining an interest in Harland & Wolff.⁶⁶ Thus, having steel, shipbuilding and ordinance works respectively in Sheffield, Clydebank and Belfast, and Coventry, its network of trading activities spread all over Britain—a rare case at that time. But, at the same time, the rumour that ‘the gentlemen concerned vied with one another as to their importance and the size of emoluments’⁶⁷ suggested some kind of lack of co-operation, though I can not add anything further from the present evidence.

The trading results in the course of the post-war years were, as predicted, poor. The already declining profit margin received a fatal blow with the advent of a coal strike in 1926, and a dividend paid every year with difficulty during the first half of the ‘twenties ceased from 1926, the first time this had happened in fifty years since the company’s emergence.

Depending upon the government for much of its selling contracts in the past, it was not easy to respond rapidly to changing market conditions. With the advent of capital re-organisation in 1930, the amalgamation of steel-making sections among the companies of Sheffield was initiated, and, as a result, Thomas Firth and John Brown came into being, 90% of whose shares were held by the company.⁶⁸

But, even in the darkest days, it never abandoned its research work, and by the time of the emergence of Messrs. Thomas Firth and John Brown, the sections of finished products by the group had been strengthened to the extent that they contained tool steel, motor steel, aircraft steel and stainless and ‘Staybrite’ steel sheets.⁶⁹ This operating company showed increasing activity from 1933 on. Moreover, as a result of a consolidation project, in conjunction with the English Steel Corporation, Firth-Vickers Stainless Steels was formed in 1935 and both companies’ respective businesses of their sheet sections were transferred to this company which drew its supplies of ingots from the two parent companies. Thus, Lord Aberconway, chairman after 1912 on could say that notwithstanding its popular description as an armament firm ‘the improvement of the company’s business during the year 1935 was independent of any orders placed under the new armament programme’.⁷⁰ This positive policy of diversification was illustrated by the fact that in 1938 it had 50% in Westland Aircraft in conjunction with Associated Electrical Industries.⁷¹

Pease & Partners and Pearson, Knowles & Co.

Pease and Partners, founded by the Pease family and their Quaker associates, seems to have been a unique and quite interesting firm in some ways. It was a typical family

⁶⁵ Moreover, in 1915 the company had a controlling interest in Cornforth Hematite Iron Co. in order to secure the supply of Hematite pig iron. Conf. Lord Aberconway, *The Basic Industries of Great Britain*, 1927, p. 66.

⁶⁶ Annual Meeting for 1907-8 (*The Times*, July 2, 1908)

⁶⁷ Annual Meeting for 1912-13 (*The Times*, July 2, 1913)

⁶⁸ Annual Meeting for 1930-31 (*The Statist*, July 4, 1931, p. 36)

⁶⁹ Annual Meeting for 1932-33 (*The Times*, June 30, 1933)

⁷⁰ Annual Meeting for 1935-36 (*The Times*, June 27, 1936)

⁷¹ Annual Meeting for 1938-39 (*The Times*, July 1, 1939)

business, whose board were, except for one or two, all composed of the Peases up to World War I, and they had a unique management philosophy. A. Pease said in 1920 that 'the question of efficiency in management rests far more on personnel than it does on the system, however good it may be'.⁷² Judging from this point of view the company was considered 'too big' in 1917 so that he thought further amalgamation undesirable, and did not try to add a steel section. Moreover, it had since its emergence placed importance on the labour question, and this seems to have gained firms roots in the company's management policy.⁷³

The company's first venture was in rich coal and iron mines in Durham and South Yorkshire, and its coal was best for coke-making. It had, at the end of the nineteenth century, set its hand to iron-making through obtaining a controlling interest in the Skinninggrove Iron Company as an outlet for its mineral supply and pursued this policy actively during the early 1910s.⁷⁴ The profits in the 1910s were fairly satisfactory and after the war it increased its capacity in coal production by adding some subsidiaries.

Notwithstanding increasing difficulties of the coal and iron trade since that time, the company mistook them to be cyclical fluctuations. A serious error in its policy was its sticking to producing pig iron from Cleveland ore. Production was not stopped until the company's profit margin was reduced to a loss in 1925, although it had already been aware of the trading loss of this section in the early 1910s. One response to the depression was further consolidation through absorbing subsidiaries step by step into its operating units.⁷⁵ Nevertheless, it was impossible, as can be surmised, to go against the tide, however it tried to do all in its power to stem the onrushing tide of the depression. Burdened with the bank debit exceeding 1 m.£, the company's capital was reduced to half the previous size in 1933, and with the accompany of this capital re-organisation the managerial influence of the Peases seems to have gone with the family's retirement from the board.

Entering the second half of the 'thirties, the increasing demand for coal reflected the renewed activity of the industry and the company made rapid improvements in its trading profits, but the iron-making section was yet far from satisfactory. This imbalance in both the coal and iron sections was such that the company's annual coal production amounted to over 3 m.t. while the annual pig iron produced at rather backward works amounted to less than 200,000 t. per year.⁷⁶ The fact that the company's vertical integration was so unsatisfactory was in part due to this policy not being as consistent, compared with the larger iron and steel companies.

Despite distrust in the managerial system it seems to have been an iron and steel company with a well institutionalised, departmentalised organisation. For instance, the annual report for the year 1911 told us that the iron-making section of Pease and Partners accompanied by Wilson, Pease and Company formed 'Ironworks Department' after 10th

⁷² Annual Meeting for 1919-20 (*The Statist*, June 12, 1920, p. 1114) Incidentally the Peases was a famous Quaker family.

⁷³ So the Chairman said at the annual meeting in 1918 that we should not only consider the question of making money, but that the business should be carried on with due regard to the welfare of both officials and workmen connected with the firm. (*The Statist*, June 22, 1918, p. 1094) Likewise, this firm was unique for its long and detailed annual meetings.

⁷⁴ Annual Meeting for 1911-12 (*The Statist*, June 15, 1912, p. 779); Annual Meeting for 1923-24 (*The Times*, May 27, 1924)

⁷⁵ Annual Meeting for 1923-24 (*The Times*, May 29, 1924)

⁷⁶ Annual Meeting for 1937-38 (*The Times*, June 15, 1938)

of May.⁷⁷ Such departments as Foundry Department and Coal Mines Department surely came into being. Besides the small board composed of four or five directors there was a small head office staff as well.

As for the extent of vertical combination Pearson & Knowles and Co. stood in the middle between Guest, Keen & Nettlefold and Pease & Partners, and notably different from Pease & Partners in that the founder's family had little influence by the beginning of this century.⁷⁸

Founded in 1874 the company was engaged in mining coal and making steel and at the outset of this century began to carry out an aggressive policy of seeking steady outlets for its products. It had interest in Rylands Brothers, a large wire-rods maker and its activity covered so wide a field, railway wheel, axles, iron and steel plant and wire rods that 'every department was very seldom bad at once'.⁷⁹ The company's next policy of importance was backward combination which resulted in having a large interest in pig iron. The Partington Steel & Iron Company was founded in 1911 in order to be freed from dependence upon imported irons.⁸⁰ Almost all of the ordinary shares were held by the company. It was quite lucky enough to meet the large demand during the war without the need for imported iron from Germany, with the result that it fully enjoyed the boom. It was in 1920 when the boom was considered still durable that Armstrong & Whitworth and Co. launched a take over bid for the company's ordinary shares which ended in a success.⁸¹ Even if, as *The Times* said, the company considered it preferable to undertake considerable capital expenditures to meet its requirements this could not be understandable without observing the composition of the board's directors. It seems that there were no members of the founders' families except the Blecklys. But this well self-contained combination was ill-fated because immediately after the emergence the munitions boom dropped off and the depression in this industry continued year by year, reducing Pearson & Knowles' dividend of ordinary share to nil in 1924. Partington steel and iron plant was completely closed by 1926,⁸² and it was this company that was, from this time onwards, the source of trouble for Armstrong, Whitworth and Co.

With the reorganisation of the Armstrong group in 1929, Pearson & Knowles accompanied with the reduction of its capital had to make its own way. After long and exhaustive consideration,⁸³ both Pearson & Knowles group and Wigan Coal and Iron, two large Lancashire coal, iron and steel companies were merged in 1930. Each of coal and steel sections in both companies were amalgamated respectively into one operating company, and the former two companies became holding firms. Thus, as the consequence of this merger Lancashire Steel Corporation controlled by Securities Management Trust came into being. A modernised works, with coke ovens, blast furnaces, open hearths and rolling mills was constructed at Irlam near Manchester.⁸⁴ Moreover Lancashire and Corby Steel Manufacturing Company, a company in which the corporation and Messrs. Stewarts

⁷⁷ Annual Meeting for 1911-12 (*The Statist*, June 15, 1912, p. 778)

⁷⁸ Only one of the Pearsons was included in the board in 1900.

⁷⁹ Annual Meeting for 1908-9 (*The Statist*, October 2, 1909, p. 764.)

⁸⁰ *The Statist*, October 7, 1911, p. 29.

⁸¹ *The Times* January 28, 1920.

⁸² *The Times*, May 22, 1930.

⁸³ *The Times*, April 1, 1933.

⁸⁴ *The Times*, March 18, 1937.

and Lloyds were jointly interested, was formed for the production of cold rolled strips.⁸⁵ Increasing improvements in the corporation's trading profits were shown after 1934, which meant the improving results of Pearson & Knowles.

Some Preliminary Conclusions

I would like to emphasise that the fact finding I was able to do using printed records of annual meetings never covered all the pertinent points which I desired for compiling my research data, and so my conclusions may be somewhat premature.

Firstly, it is important to appreciate cotton and steel companies' relative size during in the second half of the period studied in this paper. Appendix II shows the largest companies in 1929 in Britain ranked by their issued capital. Through comparing my list with the other list already mentioned, several points attract my attention. Both the top and bottom companies in my list had increased their capital four fold during the first quarter of this century. It is possible to find the above-mentioned cotton companies, except English Sewing Cotton Co. in my list, but these companies, with the exception of J. & P. Coats, rank comparatively low among the listed companies. Textile companies which previously ranked low all disappear from this list. As for the iron and steel companies, they seem to maintain their order, but some companies among the upper ranked ones in this list were destined to reorganise their capital within a few years and some previously listed companies dropped off and new companies appeared in their place. Also, several famous new companies founded after 1905 are listed. Many of them, for example, I.C.I., British Match Corporation, United Steel Co., Amalgamated Cotton Mills, and Amalgamated Press emerged from amalgamations. It should be noted that companies belonging to the so-called new industries rank quite low with the exception of I.C.I., Shell Transport and Anglo-Persian Oil. General Electric, Morris Motors and Associated Electrical Co. rank respectively as 42,53 and 56.

Generally speaking, a company making a line of products can increase its profits through increasing sales volume or increasing unit profits. The increased sales volume has to be directed to the home or overseas markets. If the home market is saturated, which held true for the cotton industry during this period, increased volume can only be achieved by means of increased exports. However, if foreign countries establish tariff barriers in order to restrict imports, or production costs are comparatively lower in foreign countries, a company is inclined to build its plants overseas.

On the other hand, increased profit margin per product is achieved by means of technological or organisational innovation. And organisational innovation or improvement is classified according to internal and inter-firm reorganisation. In the case of both industries in Britain, technological innovation appears to have been comparatively minor during the period.⁸⁶ So, organisational innovation was of great importance.

⁸⁵ *Ibid.*

⁸⁶ What I would like to make clear is that in contrast to the divisional organization which results from research and development, the trend towards departmental and vertical organization will stem out of comparatively stagnant technological innovation and severe competition, as far as both British industries are concerned.

Finally, a company with one line of products generally does not stick to its original manufacturing field. Experience tells us a life cycle of a product, and a company producing traditional goods and facing an increasingly stagnant market situation, can venture into the manufacturing of new products through research and development or by means of introducing new know-how. This is a risk-bearing venture, but it is sometimes the quickest way to success as Courtaulds' story tells us. Courtaulds, dissatisfied with traditional crepe production, ventured into the artificial silk goods' line with splendid success.

Under the circumstances that the cotton companies were burdened with, i.e. a saturated home market, they essentially became export-oriented, when they stuck to established lines of products. As a logical development from this, one would have thought that when facing both increasing production costs at home and tariff barriers in foreign countries, they would have tended to invest overseas and build plants there. However this happened only rarely.

On the other hand, having little room for epoch-making technological innovations in manufacturing established ranges of products, cotton textile companies were driven to organisational innovation or improvement. But needless to say, organisational change worthy of being called organisational innovation, does not result from a mere temporary combination among companies or an amalgamation of many companies largely with the object of maintaining or rising product prices, but from consolidation, that is, reorganisation that results in lowering unit costs. From this point of view, judging from the study already mentioned, much in the merger movement of the British cotton industry remained unsolved. This situation prevailed to a considerable extent, up to World War II.

Surprising exceptions as to overseas investment and centralised integrated management were J. & P. Coats and, to a lesser degree, English Sewing Co. which was controlled by the former and with whom it shared a common selling subsidiary. This marked contrast between J. & P. Coats and the other four Associations can be easily understood from the way they emerged which has already been outlined. The main problem in this context seems to be the question why such an energetic firm as the original Coats in the spinning and weaving sections of the British cotton industry did not appear during the second half of the nineteenth century. With the limited opportunity for technological innovation, and the conditions of free competition, which was the situation in Britain at that time, logically there would have tended to be an oligopoly or monopoly in the cotton industry. Why did this not turn out to be the case in Britain?

Many plausible arguments have been asserted. The great importance of rapid adaptability to changing fashions and the comparative unimportance of scale merit of the cotton industry may have made it easy for many newcomers to successfully enter these sections under the rapid and continuous expansion of the industry's overseas markets. It was also natural that when newcomers were engaged in some manufacturing process they entrusted export sales of their goods to merchants specialising in the trade of cotton piece-goods which they manufacture. Moreover, they were inclined themselves to produce specialities in this quite competitive trade and 'specialization, for whatever cause, tends to become increasingly irreversible'.⁸⁷

On the other hand, it was common for well established entrepreneurs to stop ploughing

⁸⁷ P.L. Payne, *op. cit.*, p. 525.

back their yearly profits, and instead, to withdraw large amounts of money for speculation on the London Stock Exchange or the purchase of estates. It is not difficult to understand that in the light of the rather aristocratic social climate prevailing, there was little incentive for them to maintain their entrepreneurial activities as energetically as they had previously done. Anyhow once such an industrial organisation became established it remained unchanged and was extremely difficult to transform it and to realise a vertical combination or integration even if the trade situation worsened. Many directors were promoted from mill manager and so their business horizon was rather narrow.

Likewise, why didn't the four Associations launch into overseas investment on a large scale when they were losing their competitive power? It would appear that the lack of vertical combination was a serious handicap, because generally it would have been difficult to succeed in the management of works engaging in merely one manufacturing process in a different business climate. British entrepreneurs could not expect to have such personal connections with merchants in foreign countries, as in Britain. But at the same time, it would have been difficult for them to be engaged in all processes of manufacturing and marketing only in foreign countries, although Calico Printers' Association did so in China.

So much for the cotton industry. As observed in this paper, it would not be easy to discuss the so-called iron and steel industry together, but, on the other hand, when they are separated there are disadvantages also. There were some common features between British cotton and steel industries in this period; traditional establishment, export-orientation, and minor technological innovations. But the iron and steel industry had some different features; its earlier and rapid loss of competitive power, emergence of high protective tariffs in Britain, its connection with the munitions industry, etc.

On looking over the above-mentioned study three kinds of policy were found: vertical combination with the object of securing raw materials and products' outlets, consolidation, and overseas investment. As for the vertical combination the key to its success or failure seems to have lain in the section and the entrepreneur playing a leading part in the process of combination. For instance, Guest, Keen & Nettlefolds Co. was superior in its diversity of finished goods of high grade and its success was due to its first chairman, A. Keen who was a former chairman of Patent Nut & Bolt, a company engaging in high specialities' production. Comparative weight of the section of fabricating steel was of importance in achieving its managerial success, so that every iron and steel company did its best to seek their own outlets. But, when the diversification of finished products made steady progress through self-contained vertical combination, each company controlled by an iron-making company seems to have remained only a subsidiary, and original companies tended to become holding companies, as in the case of Guest, Keen & Nettlefolds. On the other hand, when this diversification was attained to such a limited extent, that the weight of iron section was still high, to consolidate subsidiaries into operating units resulted from the effects of the depression as in the case of Dorman, Long & Co.

As repeatedly mentioned, it is quite hard to trace the development of the internal organisation of the above-mentioned companies. So the following statement is only my personal impression. Professor D.C. Coleman has told us that Courtaulds' management structure did not easily follow its strategy.⁸⁸ Even in the 'thirties it remained loosely

⁸⁸ D.C. Coleman, *Courtaulds*, 1969, Vol. II, p. 232 ff.

institutionalised. In the cases of Coats and English Sewing Cotton, their management were centralised, but one can not say to what extent they were institutionalised. The managerial aim of the four Associations which had emerged through the amalgamation of a number of small or medium firms, was management centralisation. Each of them was, in a small or large degree, on the path to centralised management. But most director-mill managers were on the whole rather, spokesmen for their own mills, so that despite the emergence of institutionalised departments, it would appear that centralised and departmentalised, managerial organisation was, on the whole, only partly successful. Fear of over-centralisation persisted in Courtaulds and these Associations.

In the case of the iron and steel industry, it is more difficult to trace the development of the management organisations from the reports of annual meetings. My impression is that according to their range of activities there were two forms of organisational structure. One was Dorman Long Co. which was in the process of centralised departmentalised administrative organisation through the transformation of subsidiary companies into operating units. On the other hand, in the case of Guest, Keen & Nettlefolds the administrative problem rose from making diversified products from steel. Here the organisational trend was directed to decentralisation with the result that the company became a holding company. This was the case of John Brown, Armstrong, Vickers, etc. Generally speaking the British steel industry carried out this process of regional and horizontal amalgamation in the iron and steel making section during the depressed years. This resulted in horizontal integration in the iron and steel sections. Thus, such operating companies as British Iron and Steel, Lancashire Steel, Thomas Firth & John Brown came into being. As for internal organisations departmentalised managements seems to have been on the path to institutionalisation, but it was difficult to trace their process with accuracy, although Dr. C. Erickson's pioneering work suggests the possibility of further research to me.⁸⁹

Lastly, Pease and Partners was unique in that this firm appears to have become conscious of its organisational disorder which would have resulted from its rapid growth from a family business.

(December 26, 1973)

⁸⁹ C. Erickson, *British Industrialists, Steel and Hosiery, 1850-1950*, 1959, Ch. VIII.

APPENDIX I. THE LARGEST BRITISH INDUSTRIAL COMPANIES, 1905

Rank	Name of firm	Industrial group	Year of registration	Capital in 1905 (to nearest £1,000)
1	Imperial Tobacco Co.	Tobacco	1901	17,545
2	Watney, Combe, Reid	Brewing	1898	14,950
3	J. & P. Coats	Textiles	1890	11,181
4	United Alkali	Chemicals	1890	8,490
5	Calico Printers' Ass.	Textiles	1899	8,227
6	Vickers, Sons & Maxim	Steel, shipbuilding, armaments	1897	7,440
7	Fine Cotton Spinners' Ass.	Textiles	1898	7,290
8	Associated Portland Cement	Cement	1900	7,061
9	Bleachers' Association	Textiles	1900	6,820
10	Arthur Guinness	Brewing	1886	6,000
11	Sir W.G. Armstrong	Steel, shipbuilding, armaments	1897	5,316
12	Samuel Allsopp & Sons	Brewing	1887	5,095
13	Whitbread	Brewing	1889	4,767
14	Bass, Ratcliff & Gretton	Brewing	1880	4,640
15	Guest, Keen & Nettlefolds	Iron, steel, coal	1900	4,536
16	Dunlop Pneumatic Tyre Co.	Rubber tyres	1896	4,396
17	Bradford Dyers' Ass.	Textiles	1898	4,310
18	Barclay, Perkins	Brewing	1896	4,270
19	Bolckow, Vaughan	Iron, steel, coal	1864	4,246
20	Cannon Brewery	Brewing	1895	4,200
21	Wall Paper Manuf.	Wallpaper	1899	4,141
22	Charrington	Brewing	1897	4,025
23	Lever Brothers	Soap	1894	4,000
24	Ind, Coope	Brewing	1886	3,698
25	Truman, Hanbury, Buxton	Brewing	1889	3,515
26	Mann, Crossman & Paulin	Brewing	1901	3,250
27	English Sewing Cotton	Textiles	1897	3,101
28	Peter Walker & Son	Brewing	1890	3,000
29	John Brown	Iron, steel shipbuilding	1864	2,947
30	United Collieries	Coal	1898	2,843
31	Linen Thread	Textiles	1898	2,726
32	Cammell, Laird	Iron, steel, shipbuilding	1903	2,623
33	Maple	Furniture	1891	2,620
34	Salt Union	Chemicals	1888	2,600
35	Courage	Brewing	1888	2,500
36	Bovril	Meat extracts	1897	2,500
37	William Beardmore	Steel, armaments	1902	2,500
38	Huntley & Palmers	Biscuits	1898	2,400
39	Hoare	Brewing	1894	2,354
40	Brunner Mond	Chemicals	1881	2,299
41	Waring and Gillow	Furniture	1897	2,205
42	Wigan Coal & Iron	Coal, iron	1865	2,193
43	City of London Brewery	Brewing	1891	2,127
44	British Cotton & Wool Dyers' Ass.	Textiles	1900	2,070
45	Distillers' Company	Distilling	1877	2,049
46	Threlfalls	Brewing	1888	1,997
47	Wilson's Brewery	Brewing	1894	1,992
48	Yorkshire Wool Combers' Ass.	Textiles	1899	1,966
49	Reckitt & Sons	Starch, blacklead, blue	1878	1,950
50	Lister	Textiles (silk)	1889	1,950
51	J. & J. Colman	Mustard	1896	1,916
52	Dorman Long	Iron, steel	1889	1,910

Source: P.L. Payne, *op. cit.*, pp. 539-40.

APPENDIX II. THE LARGEST BRITISH INDUSTRIAL COMPANIES IN 1929

Rank	Name of firm	Industrial group	Year of registration	Capital in 1929 (to nearest £ 1,000)
1	Imperial Chemical	Chemical	1926	65,746
2	Lever Brothers	Soap, margarine,	1894	56,628
3	Imperial Tobacco	Tobacco	1901	42,810
4	Courtaulds	Textiles	1913	32,000
5	British-American Tobacco	Tobacco	1902	28,040
6	"Shell" Transport	Oil	1897	26,988
7	Anglo-Persian	Oil	1909	23,925
8	Coats (J. and P.)	Textiles	1884	20,250
9	Vickers-Armstrongs	Armament, steel, etc.	1927	16,802
10	Distillers	Brewing	1877	12,771
11	Guest, Keen & Nettlefolds	Steel	1900	12,590
12	Vickers	Steel, shipbuilding, etc.	1867	12,469
13	Dunlop Rubber	Rubber	1896	12,184
14	Union Cold Storage	Cold-storage premises	1897	12,000
15	Harland and Wolff	Shipbuilding	1885	10,340
16	Armstrong (Sir W.G.)	Steel, shipbuilding, etc.	1896	10,013
17	British Tobacco	Tobacco	1927	9,619
18	Guinness (Arthur)	Brewing	1886	9,500
19	United Steel Companies	Steel	1918	9,324
20	Manchester Ship Canal	Warehouse	1885	9,061
21	Amalgamated Anthracite	Coal	1923	8,673
22	Candles	Illuminants	1922	8,500
23	British Celanese	Textiles	1918	8,461
24	Lyons (J.)	Refreshment contractors	1894	8,368
25	Fine Cotton Spinners'	Textiles	1898	8,350
26	Watney Combe Reid	Brewing	1898	8,056
27	Dorman, Long	Steel	1889	8,018
28	African and Eastern Trade	Merchants, shipowners	1889	7,366
29	Amalgamated Cotton Mills	Textiles	1918	7,250
30	British Oil and Cake Mills	Vegetable oil	1899	7,152
31	Underground Electric Railways	Electric railway	1902	7,061
32	Eastern Telegraph	Telegraph	1872	7,000
33	Anglo-American Telegraph	Telegraph	1866	7,000
34	British Match	Match	1927	6,709
35	Debenhams	Furriers, silkmercers, etc.	1905	6,700
36	Ocean Coal & Wilsons	Coal	1908	6,598
37	Lautaro Nitrate	Chemicals	1889	6,560
38	United River Plate	Telephone	1886	6,280
39	Bleachers' Ass.	Textiles	1900	6,266
40	Harrods	Retail distributors	1889	6,214
41	Thomas (Richard)	Steel, tinplate	1884	5,911
42	General Electric	Electrical manufacture	1900	5,854
43	Amalgamated Press	Newspaper	1926	5,700
44	Stewarts & Lloyds	Iron, steel tube	1890	5,514
45	Tanganyika Concessions	Mines	1899	5,500
46	Bolckow, Vaughan	Steel	1864	5,497
47	Harrods (Buenos Aires)	Retail distributors	1913	5,373
48	Portland Cement	Cement	1900	5,285
49	Calico Printers' Ass.	Textiles	1899	5,027
50	Consolidated Gold Fields	Mines	1892	5,000
51	Mond Nickel	Mines	1914	5,000
52	Jurgens	Margarine	1914	5,000
53	Morris Motors	Automobiles	1926	5,000
54	British Dyestuffs	Chemicals	1919	4,776
55	Niger Company	Vegetable oil	1882	4,750
56	Associated Electrical Industries	Electrical manufacture	1899	4,732
57	Bradford Dyners' Ass.	Textiles	1898	4,670

Source: Compiled from *Stock Exchange Official Intelligence*, 1929.

APPENDIX III. DIVIDENDS OF COTTON COMPANIES

Year	JPC	ESC	FCSDA	BDA	BA	CPA
1900-1	20(%)	3 ³ / ₄ (%)	9(%)		nil(%)	
1900				7(%)		nil(%)
1901-2	20	nil	8		3 ⁷	nil ⁸
1902				7		
1902-3	20	nil	8		3	2 ¹ / ₂
1903				7		
1903-4	20	nil	8		nil	2 ¹ / ₂
1904				7		
1904-5	20	nil	4		2	2 ¹ / ₂
1905				7		
1905-6	25	8	6		4	4
1906				7		
1906-7	30	8	10		4	6 ¹ / ₄
1907				7		
1907-8	30	8	12		3	nil
1908				5		
1908-9	35	8	8		nil	nil
1909				5		
1909-10	35	10	8		4 ¹ / ₂	2 ¹ / ₂
1910				5		
1910-11	35	10	8		4 ¹ / ₂	3 ³ / ₄
1911				6		
1911-12	35	10	8		5	3 ³ / ₄
1912				6		
1912-13	35	12 ¹ / ₂	28		6	3 ³ / ₄
1913				7		
1913-14	30	13	8		6	nil
1914				5		
1914-15	30	13	8		3	nil
1915				10		
1915-16	30	18	8		6	2 ¹ / ₂
1916				15		
1916-17	30	20	10		7 ¹ / ₂	5
1917				17 ¹ / ₂		
1917-18	30	20	10		7 ¹ / ₂	5
1918				17 ¹ / ₂		
1918-19	40	25 ²	12 ⁴		10	5
1919				22 ¹ / ₂		
1919-20	17 ¹ / ₂	15	20		20	10
1920				20		
1920-21	17 ¹ / ₂	15	10		10	5
1921				10		
1921-22	17 ¹ / ₂	15	8		12 ¹ / ₂	7 ¹ / ₂
1922				35		
1922-23	17 ¹ / ₂	20	12 ¹ / ₂		20	12 ¹ / ₂
1923				25		
1923-24	17 ¹ / ₂	20	14		20	10
1924				25		
1924-25	17 ¹ / ₂	20	15 ⁵		20	15
1925				15 ⁶		
1925-26	17 ¹ / ₂	20	12		14 ³ / ₈	7 ¹ / ₂
1926		8 ³ / ₄ ¹		10		
1926-27		15	10		7 ¹ / ₂	7 ¹ / ₂
1927	17 ¹ / ₂			10	10	7 ¹ / ₂
1927-28		15	15			
1928	20			11 ¹ / ₄	10	5
1928-29		15	9			
1929	17 ¹ / ₂			8 ¹ / ₃	6 ² / ₃	nil
1929-30		12 ¹ / ₂	6			
1930	15			4 ¹ / ₆	nil	nil
1930-31		10	nil			
1931	10			nil	nil	nil

1931-32		10	nil			
1932	12 ¹ / ₂	7 ¹ / ₂ ⁸	nil	nil	nil	nil
1932-33			nil			
1933	13 ³ / ₄	10	nil	nil	nil	nil
1933-34			nil			
1934	13 ³ / ₄	10	nil	nil	nil	nil
1934-35			nil			
1935	10	10	nil	nil	nil	nil
1935-36			nil			
1936	10	10	nil	nil	nil	nil
1936-37			nil			
1937	10	10	nil	nil	nil	nil
1937-38			nil			
1938	10	10	nil	nil		

¹ 6 months

² +100% capitalised bonus

³ 9 months

⁴ +20% capitalised bonus

⁵ +20% capitalised bonus

⁶ +60% capitalised bonus

⁷ 9 months

⁸ 6 months

APPENDIX IV. DIVIDENDS OF IRON AND STEEL COMPANIES

Year	GKN	DL	JB	PK	PP
1900-1	10%	8½(%)	20(%)	12½(%)	17½(%)
1901-2	10	6	15	6	8
1902-3	10	4	10	4	8
1903-4	10	nil	8⅓	3	3
1904-5	10	nil	8⅓	1	5
1905-6	10	5	10	5	8
1906-7	15	7½	10	10	10
1907-8	15	6½	10	11¼	12½
1908-9	15	4	7½	4½	8
1909-10	15	5	7½	3¼	10
1910-11	15	6	7½	4	8
1911-12	15	7½	7½	5	4
1912-13	15	8½	7½	8	12
1913-14	15	7½	10	5	12
1914-15	15	13	12½	7½	10
1915-16	15	14	12½	15	15
1916-17	15	8	12½	15	17½
1917-18	15	14	12½	15	17½ ⁴
1918-19	15 ¹	12	12½	15	12½
1919-20	15	10	12½	10	18
1920-21	10	5	10	10	14
1921-22	7½ ²	nil	5	5	5 ⁵
1922-23	10	nil	5	5	6
1923-24	10	nil	5	nil	8
1924-25	10	nil	5	nil	11½
1925-26	10	nil	nil	nil	nil
1926-27	10	nil	nil	nil	nil
1927-28	10	nil	nil	nil	nil
1928-29	10	nil	nil	nil	nil
1929-30	10	nil	nil	nil	nil
1930				nil ³	
1930-31	nil	nil	nil		nil
1931				nil	
1931-32	nil	nil	nil		nil
1932				nil	
1932-33	nil	nil	nil		nil
1933				nil	
1933-34	nil	nil	nil		nil
1934				nil	
1934-35	nil	nil	nil		nil
1935				nil	
1935-36	5	6	16⅔		nil
1936				nil	
1936-37	6	10	15		5
1937				nil	
1937-38	7½	10	17½		10

¹ +300% capitalised bonus² 9 months³ 6 months⁴ +20% capitalised bonus⁵ 11 months