UNIVERSITY OF PENNSYLVANIA

---

# The Rise of the Great Manufacturers of England, 1760-1790

BY

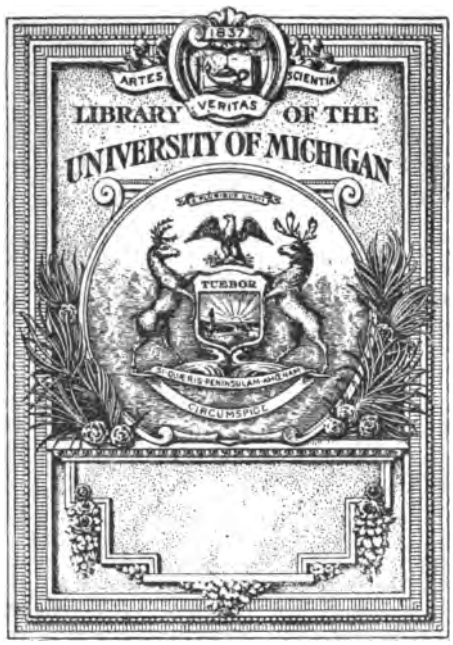
WITT BOWDEN

A THESIS

PRESENTED TO THE FACULTY OF THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY

---

H. RAY HAAS & CO.
Printers and Publishers
Allentown, Pa.
1919



UNIVERSITY OF PENNSYLVANIA

# The Rise of the Great Manufacturers in England, 1760-1790

BY

WITT BOWDEN

A THESIS

PRESENTED TO THE FACULTY OF THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY

H. RAY HAAS & CO.
Printers and Publishers
Allentown, Pa.
1919

## PREFATORY NOTE

The work was originally undertaken with the view of ascertaining the relation of public opinion in England in the latter part of the eighteenth century to the invention and application of mechanical methods of production. The investigation was broadened into a study of the early effects of the new methods of production on the reorganization of economic classes. The period covered is one of undisturbed development preceding the wars of the French Revolution. The field of labor as well as of capital was included in the scope of the inquiry, but only the latter aspect of the subject has been incorporated in the present paper.



The sources upon which the student must depend for knowledge of this subject are in many instances remote from the more familiar archives of political and economic history. The account of the General Chamber of Manufacturers of Great Britain, for instance, has been derived in part from the Chamber's resolutions and official notices published in the advertising columns of the daily press. It will be observed that extensive use has been made of the controversial literature of the period studied. In the use of such works, questions of authorship, motive, and bias in the statement of facts give rise to serious difficulties in the exercise of critical judgment. But in view of the importance of contemporaneous opinion in stimulating invention and economic progress and in affording evidence of the emergence of new economic groups, and in view of the conflicts of these groups with other groups and with the government, the controversial literature of the time cannot be ignored.

The study has been undertaken and pursued during the profound disturbance of war, and access to the sources in England

has not been possible. Publication of the results of a more comprehensive study must therefore be deferred till English archives as well as American sources have been utilized. For generous assistance in the preparation of the present paper, the writer is indebted to various librarians and to members of the history faculty of the University of Pennsylvania. He desires to acknowledge in particular the guidance and inspiration of Professors E. P. Cheyney and W. E. Lingelbach.

W. B.

UNIVERSITY OF PENNSYLVANIA,
PHILADELPHIA, PA.,
April, 1919.

## CONTENTS

# THE RISE OF THE GREAT MANUFACTURERS IN ENGLAND, 1760-1790

## CHAPTER I

### The Era of Invention

Previous to the rise of the great manufacturers incident to the transition to mechanical production, the productive resources of England were mainly in the hands of the landlords and merchant princes. The basis of the former class was the control of natural resources; the basis of the latter was an elaborate and monopolistic commercial system. The great manufacturers, who rose rapidly to a sense of unity and a position of power during the first half of the reign of George III, were possessed of neither commercial monopoly nor a monopoly of natural resources. Their origin was in the transition to mechanical production; their economic basis was in the superior productive and competitive power of the new machines.

The rise of the new manufacturers was accompanied by an extreme individualism as well as by great power. Their power grew out of the use of machines, but their individualism was independent of the transition to mechanical methods. For that transition was not an individualistic but a social creation, the result of widely diffused interests and organized activities on the part of the people of the time. The names most commonly associated with the devising of new methods of production are Hargreaves, Arkwright, Crompton, Cartwright and Watt. But while these men were working out the problems of their textile and power inventions, literally thousands of other men were

working with perhaps equal ardor to solve the same or similar problems of mechanical improvement; national and local societies were organized to stimulate and reward inventive activity; and the government paid large sums in recognition of the work of inventors and passed numerous laws for the protection of inventions. The period of the textile inventions was a period characterized by what may be termed a prevailing spirit of invention.

Interest in mechanical improvement found expression in many ways. One of its manifestations was an increase in the number of patents for inventions. The number of patents issued during the fifteen years from 1760 to 1775 was approximately the same as the number issued during the preceding sixty years. The number issued during the quarter of a century from 1760 to 1785 equaled the number issued during the preceding century and a half. [1] During no decade preceding 1760, with the one exception of the years 1690-1699, did the number of patents rise to 100, and the number during that decade was only 102. In the decade beginning in 1760, the number of patents granted was 205, and each succeeding decade was marked by a very rapid increase. [2]

The mechanical interests of the time found expression not

[1] Compiled from Woodcroft, *Titles of Patents of Invention*, Vol. 1. The exact figures follow:

Number of patents 1700-1760, 379; Number of patents 1617-1760, 743; Number of patents 1760-1775, 370; Number of patents 1760-1785, 776.

[2] Compiled from Woodcroft, *Titles of Patents of Invention*, Vol. I. Following are the numbers of patents issued during the decades since the Restoration:

| | |
|---|---|
| 1660-1669, 31; | 1730-1739, 56; |
| 1670-1679, 51; | 1740-1749, 82; |
| 1680-1689, 53; | 1750-1759, 92; |
| 1690-1699, 102; | 1760-1769, 205; |
| 1700-1709, 22; | 1770-1779, 294; |
| 1710-1719, 38; | 1780-1789, 477. |
| 1720-1729, 89; | |

Later decades also witnessed rapid increases in patent grants.

only in the increasing number of patents, but also in greater variety in the nature of the inventions. According to Bennett Woodcroft's classification of inventions for use in official publications, there were 396 kinds of inventions patented during the years 1700 to 1785, and of these groups, 168 were added during the years 1760 to 1785. [3]

The greater inventive activity of the late eighteenth century is evident not only from a comparison of the number and the variety of the patents, but also from a comparison of the nature of the inventions represented by the patent grants. The early patents were in many cases issued not for definite, tangible inventions, but for ideas and suggestions, and for vague, undefined devices and processes in some instances not far removed from the occult arts of the middle ages. [4] During the period of increased inventive activity, as well as before, patents were issued for worthless inventions. But the more definite, workable nature of the patents issued during the later period, in comparison with the tendency toward vagueness, extravagance and speculation in the earlier patents, affords a sharp contrast. This contrast is to be explained in part by the general increase in mechanical and scientific knowledge; and in part by the more rigorous enforcement of the rules for submission of definite specifications, drawings and models in order to secure patents. [5]

The increase in the number and the variety of patents issued and the more explicit nature of the inventions indicate clearly a rapid growth of interest in mechanical improvement. So ap-

[3] Compiled from Woodcroft, *Subject-matter Index of Patents of Invention*, Vol. 1.

[4] For a few instances of such patents, see Woodcroft, *Titles of Patents of Invention*, Vol. 1, p. 2, patent granted to Ramsey and Wildgosse; p. 28, to Worcester; p. 44, to Becher; p. 51, to Ayscoghe; p. 52, to Smartfoot; p. 54, to Porter and White; p. 57, to Williams and Marwood; p. 63, to Winball; p. 69, to Aldersey; p. 92, to Payne.

[5] Concerning patent law and practice, see below, pp. 8, 9.

parent to the people of the time was this tendency that it called forth in 1776 a book of verse entitled *The Patent.*[6] The following passage is a facetious but none the less significant expression of the inventive spirit evidenced by the patent records:

"Hail to the patent! which enables man
To vend a folio or a warming pan.
This makes the windlass work with double force,
And smoke-jacks whirl more rapid in their course;
Confers a sanction on the doctor's pill
Oft known to cure, but oft'ner known to kill.
What man would scruple to resign his breath
Provided he could die a patent death!

. . . . . .

The time may come when nothing will succeed
But what a previous patent hath decreed;
And we must open, on some future day,
The door of nature with a patent key."

The increased number, variety, and definiteness of patents are by no means the only ways in which the prevailing spirit of invention found expression. The securing of a patent was an expensive proceeding, and was merely the initial step in the protection of the rights of the inventor. Because of this fact, and of the further fact that other methods of rewarding inventors were devised, there was an immense inventive activity unrecorded in the patent office. One of the chief purposes of the Society for the Encouragement of Arts, Manufactures and Commerce, as well as of various local societies, was to promote mechanical improvement by offering premiums as a substitute for patent rights. Extensive inventive activity by men either careless of their rights under the patent laws, or unable to assert their claims, will become apparent in the discussion of the work of

[6] Reviewed in the *London Magazine*, 1776, p. 383.

these societies. It will suffice at this point to state by way of illustration that Hargreaves did not patent his spinning jenny till several years after its invention; that Crompton's "mule" was never patented; and that before the time of Hargreaves' jenny, premiums were paid for four different machines, none of which were patented, for spinning more than one thread at a time.

The question of the best method of rewarding inventors, as well as other aspects of popular interest in mechanical progress, found frequent expression in the various types of current literature. A survey of accounts of this kind reveals innumerable devices, many of them unpatented, and some of them highly successful. These accounts are significant because they show not only an extensive inventive activity but also a widespread public interest in the subject. The briefest analysis or enumeration of popular contemporaneous records having to do with inventions would carry the discussion afield. It is necessary, therefore, to mention only a few characteristic instances. The *Annual Register* had a department regularly devoted to "Useful Projects." In 1764 a new periodical, *The Wonderful Magazine,* devoted to the recording of "things out of the common road," was advertised.[7] The *Museum Rusticum et Commerciale,* begun in 1764, unofficially patronized by the Society for the Encouragement of Arts, Manufactures and Commerce, and devoted to the recording of new and valuable discoveries, was of such interest, according to the editors, that "there was scarcely a newspaper or magazine in the kingdom" that had not reprinted portions of its contents.[8] A book entitled *The Patent* has already been mentioned. Among the numerous references to inventions and inventors in the literary journals of the time, there is one of special significance because of the light it throws on the mechanical interests of the

[7] In *Lloyd's Evening Post and British Chronicle,* Vol. 15, p. 320.
[8] Vol. 1, Preface; Vol. 2, Advertisement.

people about Manchester before the introduction of cotton factories. This account is a sketch of the life of Adam Walker, a self-taught mechanic of the north of England, who about the middle of the century introduced practical education at Manchester, in keeping with the needs of "a town of trade;" gave lectures on mechanics in Manchester and neighboring towns,—lectures so popular that in many of the smaller towns buildings large enough to accommodate his audiences could not be secured; and himself invented about a score of devices, most of which were never patented. [9] Classical allusions, of great interest to the cultivated classes of the time, were in many instances reinterpreted in the light of mechanical interests. One writer even asserted that many pagan gods were "mortals who had signalized themselves by their beneficial inventions," and had been rewarded with deification. [10]

Interest in the question of rewarding inventors was perhaps the most important aspect of the contemporaneous discussions, because of the reaction in stimulating further inventive activity. As early as 1774 a booklet appeared which vigorously defended the legal rights of inventors on the basis of their public value. This work opposed the idea of the superiority of the "polite arts," and asserted that these are of much less value than "new inventions and discoveries in the arts and sciences." Popular support of this view is evidenced by the following lines by an anonymous rimester:

> " 'T is great, 't is wonderful, sublime,
> No doubt, to build the lofty rime!
> But, deaf to what the poet sings,
> Though charm his muse the ear of kings,
> The *patriot* sees more wit and good in
> The invention of a marrow pudding."

[9] *European Magazine*, Vol. 21, pp. 411-413.

[10] Edward Goodwin of Sheffield, in *Gentleman's Magazine*, Vol. 56, Pt. 1, pp. 25, 26 (1786).

It was urged in particular, by Kenrick and others, that in recognition of inventive ability a more liberal patent law should be enacted. [11]

Of the various general discussions of the proper method of rewarding inventors, the most important was that of Sir John Sinclair, President of the Board of Agriculture. In 1795 he definitely formulated a plan which had been developing for more than a decade as a result of his extensive interests, foreign travel, and correspondence. This plan was a remarkably liberal and comprehensive system for combining the adequate rewarding of inventors with objects even more important. He proposed "a general agreement among the powers of Europe and the United States of America, for the purpose of rewarding those who make any useful discovery," and for taking means "to have the same rapidly extended and brought to its ultimate state of perfection." Each country was to set aside an adequate sum for the rewarding of "any new invention," which was thenceforth to become generally available. The plan was to be carried out by a system of boards and secretaries cooperating in the various countries,—a definite international organization with comprehensive aims and powers. So optimistic was he concerning his plan that he believed that such a system of international cooperation for the promotion of common, peaceful interests would tend to do away with warfare, and would promote the development of a new and wholesome system of international relations. His attempt to carry out such a far-sighted and ideal policy—and serious attempts were made—were ineffective because of the wars and jealousies of the time. But his recognition of the importance of inventions and their far-reaching possibili-

[11] W. Kenrick, *An Address to the Artists and Manufacturers of Great Britain*, pp. 16, 32, and *passim*.

ties is nevertheless significant evidence of interest in mechanical progress. [12]

Proposals for changes in the methods of rewarding inventors were justified by the fact that in practice much injustice and inequality prevailed. To be sure, the accounts of persecuted and ill-treated inventors have been exaggerated, as in the case of Hargreaves. [13] But inventors, as well as persons of other pursuits, unless possessed of wealth or position, not only had precarious legal rights (as witness the laws against debtors) but found extreme difficulty in maintaining such rights as they possessed.

The prevailing view of the time conceded the desirability of making special provision for the rewarding of the inventor in ways other than by merely allowing him to profit by the application of his invention to its intended purpose. Sir John Sinclair held, as has been noted, a distinctly socialized conception of inventions. And the Society for the Encouragement of Arts, Manufactures and Commerce viewed inventions as the legitimate property of the public. But even in these instances it was agreed that special recognition of inventors in some form was desirable.

There were three principal methods of rewarding inventors: (1) patents; (2) special privileges or compensations granted by the government; and (3) private aid, usually in the form of premiums and medals granted by societies.

The law of patents then in force was the famous Statute of Monopolies, 21 James I, c. 3, secs. 5 and 6. This law, which in

[12] *European Magazine,* Vol. 28, pp. 76-78; Sinclair, *Essays on Miscellaneous Subjects,* pp. 381-385, 391 (London, 1802). The extensive nature of Sinclair's connections is shown by his *Correspondence* (London, 1831), particularly Vol. 2, devoted mainly to America and the Continent. See also, for further discussions of methods of rewarding inventors, James Peacock, *Proposals for a Magnificent and Interesting Establishment,* pp. 11, 12; and *New and Old Principles of Trade Compared,* p. 82.

[13] See accounts in Baines, *History of the Cotton Manufacture,* pp. 161-163, 189, and Abram, *History of Blackburn,* p. 209.

general condemned monopolies, made an exception in the case of inventions. Patents for inventions might be issued for a period of fourteen years. The principles of the law have remained substantially unchanged. Parliament indeed enacted no important change even in the procedure for granting patents before the year 1835. But the increase of governmental offices and the elaboration of procedure, combined with the more exacting requirements of the courts concerning specifications,[14] caused legal rights to have precarious value except in the cases of the more important inventions in the hands of the relatively well-to-do. Estimates of the cost of securing a patent range, so far as observed, from £80 to £143. The difficulties and annoyances involved in the proceedings are suggested by the fact that in a specimen bill forty-four separate items are listed. The maintaining of patent rights was further complicated by the necessity of securing separate and distinct patents for Ireland and Scotland.[15]

It is to be observed that the state of the patent law and practice is not of itself indicative of increased inventive activity; but the difficulty of asserting patent rights gives added significance to the increase in the number of patents beginning about 1760.

There was an implicit recognition of this difficulty, as well as an increasing interest in greater rewards for inventors, manifest in the more frequent resort to special governmental grants

[14] The vagueness of Arkwright's specifications led to the annulling of his patent. This case, as well as others indicating a more rigorous application of the law, is discussed in Davies, *Collection of the Most Important Cases Respecting Patents of Invention.*

[15] *Statutes of the Realm,* Vol. 4, Pt. II, p. 1213 (21 James I, c. 3, secs. 5, 6); Robert Frost, *Treatise on the Law and Practice Relating to Letters Patent for Inventions,* Vol. 1, pp. 1-4; H. F. Moulton, *The Present Law and Practice Relating to Letters Patent for Inventions,* p. 2; William Hands, *The Law and Practice of Patents for Inventions,* pp. 12-15; W. Kenrick, *An Address to the Artists and Manufacturers of Great Britain,* pp. 40, 41, and *passim.*

of money or privileges. Previous to the year 1760, such special grants, though not unknown, were extremely rare. One of the few instances was a reward of £14,000 voted to Sir Thomas Lombe in 1731, not however, for a new invention, but for machines introduced from Italy for the manufacturing of silk. Lombe's petition was for an extension of his patent. This aroused extensive opposition, and the matter was compromised by the payment of the above sum in recognition of his great services in securing for England models of the machines which had been the basis of Italy's superiority in the manufacture of silk. [16]

In contrast with the paucity of special rewards for new inventions before 1760, the period immediately following abounds with such rewards. George III on several occasions showed personal interest in new inventions and in providing rewards therefor. But the main recourse of inventors seeking public patronage was the House of Commons. The funds and privileges granted, however, were not entirely in the nature of rewards. Many of the grants were specifically for the purpose of making experiments and tests.

One of the most noteworthy cases of special governmental aid was the exceptional grant of £20,000 to John Harrison for his device for determining longtitude at sea. This case is significant for a number of reasons. It is not only an example of special grants as a method of rewarding inventors but is also an illustration of the desire on the part of the government to foster inventive activity; for the reward was offered before the invention was made, and was paid by installments as the device was developed and perfected. Moreover, the government conducted extensive experiments and tests to aid the inventor and to verify his claims. It is one of many instances of inventions resulting

[16] Commons *Journals*, Vol. 21, pp. 782, 795, 798, 840, 842, 855.

from conscious, persistent, cooperative effort. As early as 1713 a law was passed offering a reward of from £10,000 to £20,000 for a practical method of determining longitude at sea. In 1753 the reward was still unassigned, and another act was passed "to render more effectual" the law of 1713. During the years 1761 to 1780, the problem led to the enactment of no less than nine laws, as well as to the making of a great variety of experiments and the expenditure of large sums of money. John Harrison, who, like most of the other great inventors of the time, was of humble parentage and meager, self-acquired education, spent long years in his attempt to solve the problem defined by parliament. His efforts culminated in 1772 in the perfecting of a device which met the requirements of the most rigorous tests. As a result, an act was passed in 1773 appropriating £8750, the sum of £11,250 having been paid to him in the course of his experiments.[17]

In addition to the granting of general patent rights and of special rewards and aids, the interest of the government in mechanical improvement was evidenced by the passing of various laws for the protection of machines and the maintenance of British monopoly in their use.[18]

Neither the granting of general patent rights nor of special aids was regarded as an adequate method of rewarding inventors

[17] 12 Anne, St. 2, c. 15; 14 George II, c. 39; 26 George II, c. 25; 2 George III, c. 18; 3 George III, c. 14; 5 George III, cc. 11, 20; 10 George III, c. 34; 13 George III, c. 77, sec. 29; 14 George III, c. 66; 17 George III, c. 48; 20 George III, c. 61. Accounts are given in the *European Magazine*, Vol. 16, pp. 235, 236; in the *Annual Register*, 1765, 2d part, pp. 113-133, and 1777, 2d part, pp. 24-26; and in the *Dictionary of National Biography*, Vol. 25, pp. 35, 36. For other instances of parliamentary grants and royal favor, see Commons *Journals*, Vol. 32, p. 240; Vol. 33, pp. 534, 600, 609, 664, 745; Vol. 34, pp. 382, 740, 746-748, 756; Vol. 35, pp. 142, 207, 343; Vol. 36, pp. 30-33, 238; Vol. 37, pp. 367, 368, 392, 393, 422; Vol. 40, pp. 613, 1024; Vol. 47, pp. 416, 478, 546, 762; *Universal Magazine*, Vol. 49, pp. 52, 107; *European Magazine*, Vol. 11, p. 211; and *Gentleman's Magazine*, Vol. 56, Part I, p. 26.

[18] Concerning these laws, see below, p. 44, ff.

and stimulating improvement. Some of the defects of the patent system have already been mentioned. The method of rewarding inventors by special grants was criticized on various grounds. It is obvious that rewards of this nature were unequally distributed, and were apt to be the result not of merit but of influence. An inventor without merit might secure recognition through political agencies, and a man deserving recognition but lacking connection with parliamentary and ministerial forces was likely to be neglected. Minor improvements and devices or processes of dubious merit were at times the subjects of prolonged discussion, while many of the most important inventions were entirely unnoticed. [19]

While criticisms of special grants to inventors were well founded, it is nevertheless true that such grants afford important evidence of public interest in mechanical progress and of a desire to make inventions common property. As for the other governmental method of rewarding inventors, namely, the granting of patents, the vast increase in the number and kinds of patents is proof, as has already been set forth, of widespread inventive activity. A study of a third form of reward, the granting of premiums and medals by societies, affords evidence alike of extensive inventive activity by individuals and of organized interest on the part of the public. Rewards by societies and patronage by the government are alike significant as indicating the part played in the mechanical transition by organized social forces as contrasted with the spontaneous, uncorrelated activities of individual inventors.

The principal society interested in the granting of premiums for inventions was the Society Instituted at London for the En-

[19] For criticisms of special grants as a method of rewarding inventors, see *Parliamentary History*, Vol. 38, pp. 311, 467-472, 538; *Parliamentary Register*, Vol. 4, pp. 358-370, 378-382, 392, 396; W. Kenrick, *An Address to the Artists and Manufacturers of Great Britain;* and *Gentleman's Magazine*, Vol. 56, Pt. I, p. 26.

couragement of Arts, Manufactures and Commerce, founded in 1754, and commonly known as the Society of Arts. Its purposes and activities were so characteristic of the spirit of mechanical and material progress pervading the period of its early history as to justify a somewhat detailed account.

The early history of the Society of Arts unquestionably coincided with a period of great inventive activity. The period is to be compared, in this respect, not with the following but with the preceding period. In contrast with earlier times, the profusion of mechanical interests and activities was remarkable. By a writer of the time, the change was not considered as merely coinciding with the origin of the Society of Arts, but was attributed largely to the founding of that society, which he characterized as "one of the most remarkable epochs in the history of the arts." [20] This is of course an exaggeration of the society's influence. But the work of the society, even when subjected to a more critical view, merits a more prominent place in the history of the time than has commonly been given it.

Its organization was not without precedent. The Dublin Society, organized as early as 1731, was characterized by Lord Sheffield as "the first institution of its kind in Europe." It was a semi-official body, serving as a sort of "board of trade, manufactures and useful arts," particularly agriculture. It was at first supported by private subscriptions, but soon secured parliamentary aid, the usual subsidy granted each session being £10,000. Its relation, however, to invention was slight; only in its general purpose of encouraging the useful arts did it serve as a precedent for the English society. [21]

The London society was organized in 1754 by William Shipley. Shipley, realizing the need of patronage for the success

[20] *Encyclopedia Britannica*, 3d Ed., Vol. 17, pp. 586, 587.

[21] Sheffield, *Observations on the Manufactures, Trade, and Present State of Ireland*, pp. 204, 260; Young, *Tour in Ireland*, Vol. 2, pp. 131-133.

of such a project at that time, "found means to engage a few persons of rank and fortune to meet at Peele's Coffee House in Fleet Street, and to adopt a plan for promoting arts and commerce." Prominent among these original members were Lord Folkstone, Lord Romney, and Dr. Stephen Hales.[22]

The plan of the society was comprehensive. The officers consisted of a president, twelve vice-presidents, a secretary, an assistant secretary, a registrar, and a collector of the subscription money. There were six committees, each concerned with a special field, and each, with one exception (the committee on accounts), meeting weekly. Four general meetings of the society were held each year. Candidates for membership might be nominated on recommendation of three members, and election to membership required a two-thirds vote of the members voting. Perpetual membership required a fee of twenty guineas; and subscribing membership, not less than two guineas. In 1783 there were 481 contributing members, and the number rapidly increased thereafter. Many of the prominent men of England were members. The names of inventors and manufacturers occur side by side with the names of lords, gentry and high officials. Arkwright, Matthew Boulton, and Josiah Wedgwood, as also Wedgwood's sons, were members, and Cartwright was at one time a candidate for the position of secretary of the society.[23]

The nature of the society's activities is indicated by its committee organization and by the premiums and medals offered.

[22] *Transactions of the Society for the Encouragement of Arts, Manufactures and Commerce,* Vol. 1, *Introduction;* Vol. 3, pp. 124-128; Vol. 4, Preface, pp. xvii, xviii (Shipley's portrait forms the frontispiece to Vol. 4); Vol. 55, Preface; Dossie, *Memoirs of Agriculture and other Oeconomical Arts,* Vol. 1, p. 28; *Encyclopedia Britannica,* 3d Ed., Vol. 17, p. 587; Wood, *History of the Royal Society of Arts,* p. 1, ff.

[23] *Transactions,* Vol. 1, pp. 276-281, and lists of members in the various volumes; Anderson, *Historical and Chronological Deductions of the Origins of Commerce,* Vol. 2, p. 407 (Ed. 1764); [Strickland], *Memoir of ..... Edmund Cartwright,* p. 162.

Its five committees (excluding the committee on accounts) were concerned with (1) correspondence and agriculture; (2) colonies, trade, and manufactures; (3) mechanics; (4) polite arts; and (5) chemistry. But mechanical interests were by no means confined to the committee on mechanics. The terms applied to the committees were arbitrary. Agricultural implements were under the jurisdiction of the committee on agriculture; and the other committees similarly promoted inventions in their respective fields. Its interests even in connection with "polite arts" were in reality quite largely practical. The term included designing and other branches which the society recognized as of great importance to English manufacturers, branches in which there was special need of improvement due to the superiority of the French. The society was interested in improvements of various kinds; but its most noteworthy work was the promoting and rewarding of inventive activity. The principal method used was the bestowing of medals and premiums. "There should be a bank of generosity to which such [inventive] genius may without difficulty apply, and from which, with certainty, it may expect the reward of merit as well as a mark of honor." This was the society's ideal, which, it was claimed, has "undeniably proved the surest means of employing and applying such genius to national benefit." [24]

The wide variety of the society's interests in stimulating and rewarding inventive activity is evidenced by the following list, far from complete, of devices or processes for which premiums were offered and paid during its early years: [25] Plows of many types, thistle cutters, scythes, mechanical turnip slicers, drills, threshers, horse-hoes, bee-hives, and a large number of

[24] *Transactions*, Vol. 1, pp. 27, 28, 44-49, 280, 281; Dossie, *Memoirs*, Vol. 1, pp. 32-308.

[25] Compiled from *Transactions*, Vol. 1, pp. 3-62; and W. Bailey, *Advancement of Arts, Manufactures and Commerce.*

improved processes and products connected with agriculture; crucibles, retorts, and numerous devices and processes in chemistry; combing and carding machines, reels, winding and doubling machines, spinning wheels and spinning machines, looms and stocking frames, and many improved fabrics, processes and designs in the manufacture of cloth; a method of measuring distances; carriages and minor improvements connected with them; handmills, windmills, sawmills, tidemills; hydraulic engines; diving bells; methods of floating stranded vessels; compasses, valves, gun harpoons, ventilators, umbrellas, locks, augurs, jacks, cranes, pulleys, hinges, guages, timepieces; a universal standard of weights and measures. The proportion of premiums awarded to premiums offered was small. In 1784, a typical instance, premiums were offered for 167 items. The number of awards the following year was only twenty-two. The society's purpose was attained if its suggestions of needed improvements were acted upon, even if the resulting invention never came into its possession. During the years 1754 to 1782, its awards totaled the sum of £28,212, 11 s. 4 d. A large proportion of the awards were honorary, and in some cases pecuniary rewards were returned by inventors. The public-spirited nature of the society's work is indicated by the fact that it rewarded inventors who were unable to secure patents, and those, also, who were willing to contribute their inventions to the public. Rewards were never granted for patented inventions; and all machines and models for which premiums or medals were awarded, as well as others donated to the society, were not to be patented, and were kept on public exhibition. [26]

Indeed, the ultimate purpose of the society was not merely to promote "inventions, discoveres and improvements," but also "the laying open any such to the public." The repository of

[26] *Transactions*, Vol. 1, pp. 62, 269, 270; Vol. 2, pp. 271-346; Vol. 4, pp. 231-239; Vol. 20, Preface, pp. iv-vi.

the society was open to the public, according to announcement in 1783, every day except Sunday and Wednesday. It was stated that since material progress depends "on the improvement of mechanical engines," "the society have from their institution invariably endeavored, by every means in their power, to bring forward to public use and notice all such machines as have a tendency to promote that end." The models and machines in their repositories have been "open to the free and uninterrupted examination of all persons," and from these exhibits "it is well known great advantages have arisen, as well to the ingenious workmen as to the learned and scientific observers." [27]

Evidence of contemporaneous recognition of the importance of the Society of Arts is abundant. In 1765 the city of Liverpool gave the society £100, and in the same year, London contributed £500 to its treasury. The popularity of the *Transactions* was so great that a third edition of the first volume, for 1783, was printed in 1786. Later volumes also were soon reissued. Commendations of the society's work by writers of the time are extremely numerous and in tone superlative, as when Arthur Young expressed the view that for every guinea spent by "this most laudable society," the country had been benefited a thousand pounds. The officers of the society were themselves not unwilling to solicit support on the basis of the praise generously bestowed upon the society, and on the ground of the public benefits accruing from its work. Samuel More, the secretary, wrote that no nation had ever received "more real advantage from any public body whatever than has been derived to this country from the rewards bestowed by this society." [28]

Closely connected in origin and purpose with the national society were various local organizations. The compiler of the

[27] *Transactions*, Vol. 1, p. 65, Vol. 13, Preface, p. xv.

[28] *Annual Register*, 1765, pp. 111 (Chron.), 136 (Chron.); *Annals of Agriculture*, Vol. 1, p. 64; *Gentleman's Magazine*, Vol. 59, Pt. 1, p. 478.

*Transactions* claimed in 1783 that "a great and general effect" of the society's work had been not only to produce mechanical improvements "every year increasing," but "to excite and diffuse a spirit of improvement." Another writer stated that "among its benefits is the establishment of other similar bodies." Robert Dossie, writing fourteen years after the founding of the society, stated that its aim, "to cherish invention and propagate intelligence of this sort," was being emulated not only by many individuals but also by "several country societies." [29]

Even the Royal Academy of Arts, founded in 1768, was distinctly influenced by the Society of Arts. To the influence of the two organizations has been attributed the success of Englishmen in overcoming their deficiency of taste and skill in drawings, designs, and patterns for their rapidly developing textile fabrics and other industries in which they were previously surpassed by the French. It is in this light that Wendeborn, a critical German observer, discusses the Academy. The honor of having called the Academy into being was claimed distinctly by the Society of Arts. [30]

The Manchester Literary and Philosophical Society, like the Royal Academy of Arts, had aims less practical and concrete than those of the London society. But it is worthy of mention for two reasons. Its organization was influenced by the success of the Society of Arts; and its interests included the application of science to the promotion of mechanical improvement, particularly in the manufacturing enterprises about Manchester. Under its auspices there was organized in 1783 a "mechanic school," under the name of the Manchester College of Arts and Sciences.

[29] *Transactions*, Vol. 1, pp. 40, 41; *Encyclopedia Britannica*, 3d ed., Vol. 17, p. 586; Dossie, *Memoirs*, Vol. 1, Preface, p. x.

[30] Wendeborn, *View of England towards the Close of the Eighteenth Century*, Vol. 1, p. 230, Vol. 2, pp. 194, 197; *Transactions*, Vol. 1, pp. 46-49. Wendeborn notes also the organization in 1773 at Liverpool of a Society for the Encouragement of Designing, Drawing, and Painting.

The founders of the school hoped to make it "a kind of oracle, which those might consult who were engaged in mechanical improvements, and who might here, at once, gain that information which it might cost them months and years to obtain by their own unassisted efforts." The influence of the London society appeared in a plan for a repository for the exhibition of machines and models of all sorts, particularly in textile manufacturing. But the plan, though credited by the founders to the London society, was even more ambitious and far-reaching. In the first place, there was to be not merely an exhibit of machines and models, but accompanying instruction in mechanical principles. In the second place, instead of having an exhibit in one place only, it was proposed that such a "mechanic school," with an exhibit and instructors, should be established "in every large town, and particularly in the center of every important manufacture." This plan was proposed in 1782. As a result, the College of Arts and Sciences was founded the next year. The officers of the Literary and Philosophical Society were governors of the College. The plan of 1782 was altered, and certain features of a less practical or technical nature were adopted, but important elements of the original proposals were included, the principal aim being the investigation of physical and chemical sciences and their application to improvements in arts and manufactures. [21]

A society similar to that at Manchester, namely, the Literary and Philosophical Society of Newcastle, was founded near the end of the century, and was devoted largely to "the scientific study and utilization of the two great natural products of this part of the country, coal and lead," to "the introduction of me-

[21] *Memoirs of the Manchester Literary and Philosophical Society*, Vol. 1, pp. x, 80-89, Vol. 2, pp. 16-29, 42-46; and a circular of the "College of Arts and Sciences instituted at Manchester, June 6, 1783," dated July 9, 1783.

chanical and other improvements," and to "the establishment of such other manufactures as are ..... peculiarly adapted to this neighborhood." [32]

The various local societies devoted specifically to the encouragement of agriculture, manufactures and useful arts afford further evidence of the spirit of material progress powerfully stimulated by the national society. One of the earliest of these societies was observed by Arthur Young in Lancashire during his northern tour. It met regularly at Manchester, and like the London society, offered premiums of various kinds. To its influence, Young attributed much of the progressive spirit there prevailing. [33]

The year 1777 witnessed the origin of the "Society Instituted at Bath for the Encouragement of Agriculture, Arts, Manufactures and Commerce," almost identical in name, it will be observed, with the London society. It was organized for the counties of Somerset, Wilts, Gloucester and Dorset and the city of Bristol. It offered premiums, largely for experimental improvements in agriculture and the invention of implements; and it engaged in various activities of such importance as to lead at length to the publication of a series of *Letters and Papers,* somewhat similar to the *Transactions* of the society at London. [34]

The activities of a similar society at Odiham in Hampshire included experimental farming as well as the awarding of premiums, and the society's interests included manufacturing as

[32] *Plan of the Literary and Philosophical Society of Newcastle,* pp. 5-7.

[33] Young, *Six Months' Tour through the North of England,* Vol. 3, p. 194, ff; *To the President ..... of the Agriculture Society at Manchester.* An address by Thomas B. Bayley, 1776.

[34] Although the London Society did not begin the publication of its *Transactions* until 1783, it had previously issued various premium books and other publications, and had secured wide publicity by means of the press and special series under its patronage. Concerning the society at Bath, see *Rules and Orders of the Society Instituted at Bath,* etc.; *Letters and Papers,* Vol. 1; and the *Annual Register,* 1789, p. 72 (2d part).

well as agriculture. An interesting phase of its work was the buying of improved seeds and implements, and their resale, to non-members as well as members, at net cost, "in order to make the use of them more common." [35]

Various similar societies are mentioned more or less prominently in the press of the time, as the Lewes, Leicester, Durham, Kent, South Devon, East Riding of York, and Melford societies. A writer in 1781 observed the prevalence of such organizations, supported, he stated, like the London society, "with such liberality" as to promise far-reaching results. [36]

In view of the importance of the transition to mechanical production in the textile industries in relation to the rise of the new type of manufacturers, the connection of the Society of Arts with the invention of the textile machines forms a pertinent inquiry. [37]

Hargreaves' spinning jenny is thought to have been invented in 1764, but was not patented till 1770. Arkwright's device was patented in 1769. The Society of Arts early offered premiums for improvements in the spinning wheel, but in 1760 they "carried their speculation further," wrote Robert Dossie in 1768. "They offered a premium for the best invention of a machine that would spin six threads of flax, cotton, wool, or silk, and require only one person to work and attend it." The premiums offered in that year were £40 for the best machine, and £20 for the next best. In 1761 the premiums were raised to £50 and £25; and in 1763, to £100 and £50. That the idea was familiar to members of the society before the invention of the spinning jenny and the water frame is shown by contemporaneous state-

[35] *Annals of Agriculture,* Vol. 2, pp. 425, 426; Vol. 3, pp. 231-239, 304, ff, 481-490; Vol. 4, pp. 195-197, 321, 322; Vol. 5, pp. 286, 287.

[36] *Annual Register,* 1781, p. 104 (2d part).

[37] Such an inquiry is particularly desirable because of the fact that even careful students of these inventions have often ignored the work of the society, and have in some cases been misinformed concerning it.

ments of Robert Dossie, who discussed the views of some of the members concerning the spinning machine patented by Lewis Paul in 1738. These members, according to Dossie, feared that mechanical resources had been exhausted in the expensive attempt to bring this machine to perfection. And yet, because of the pressing need of a better method of spinning, the society, at three different times, and with increasing rewards, published its proposals calling the attention of inventors throughout the country to the nature and urgency of the problem.[28]

Nor were the society's efforts without results. On March 25, 1761, before a joint meeting of the committees on manufactures and mechanics, John Webb operated a device for spinning two threads and reeling at the same time. The committee awarded him the sum of £20. On the same day, Thomas Perren received a reward for a wheel with which, as with Webb's device, one person could spin two threads at one time. The committee reported that "it had been used with success." In April of 1762, Thomas Perren received another premium for a wheel for spinning coarse linen. This kind of spinning had required two persons, "one to draw out the flax or hemp, and the other to turn the twisting wheel." Perren's wheel not only required only one operator but twisted the thread much more accurately. In 1763 George Buckley presented an invention which in accordance with the society's proposal, spun six threads at a time and was operated by a single person. The committee found the

[28] Dossie, *Memoirs*, Vol. 1, pp. 96-98; *Transactions*, Vol. 1, p. 33. See also Mantoux, *La Revolution Industrielle*, pp. 207, 208. Mantoux's thorough and comprehensive work is here in error. He states that the society had in view "not the construction of a spinning machine—the idea did not enter the minds of its members—but only an improvement of the wheel." Obviously the exact offer of prizes by the society escaped his notice. Baines in his *History of the Cotton Manufacture* also fails to note the vital distinction between a machine and a mere improvement in the wheel made by the society in its proposals (p. 154). Even Wood's excellent *History of the Royal Society of Arts* (pp. 257, 258) is here in error.

machine imperfect, but possessed of merit, and it was adjudged capable of improvement. To encourage the inventor in perfecting it, the committee awarded him twenty-five guineas. On April 11, 1764, William Harrison secured an award of £50 for a device which, though enabling the operator to spin only two threads at a time, was regarded as having great merit, both by the society and by the press. The *Annual Register* referred to it as "a masterly improvement" which, if generally introduced, would greatly benefit the nation and "soon increase, by one-third perhaps, the number of our most useful hands." For minor improvements in the ordinary wheel various premiums were awarded. [39]

The attempt of the Society of Arts to solve the problem of mechanical spinning was but one of many measures it undertook to improve textile manufacturing. The catalog of machines and models on exhibit in 1783, and published in the first volume of the *Transactions,* includes a variety of inventions. In addition to several other improvements in spinning, there are listed an invention for combing, three machines for winding and doubling, three machines for winding silk, four looms, including two stocking frames, and certain other devices. The inventors of the improved stocking frames, in 1765 and 1766, each received £100; and the invention of 1766 was regarded as of such importance that "a considerable body" of manufacturers rewarded the inventor by a subscription. [40]

It is to be observed from the preceding statements that the society attempted, with some measure of success, to solve the problem of mechanical spinning before the time of Hargreaves. In 1783, two years before Cartwright's first power-loom patent,

[39] W. Bailey, *Advancement of Arts, Manufactures and Commerce,* pp. 195-202; *Annual Register,* 1764, pp. 66, 67 (Chron.); *Museum Rusticum et Commerciale,* Vol. 4, pp. 72, 73.

[40] *Transactions,* Vol. 1, pp. 314-316; Dossie, *Memoirs,* pp. 136, 137.

the society offered premiums for the solution of the problem of mechanical weaving. Its offer was continued during the two succeeding years. Even before this proposal was made, the society's earlier premiums, according to its own claims, had produced "very extraordinary improvements in the loom," the improvements in the stocking frame probably being referred to. [41]

The influence of the society in bringing about the transition to mechanical production in the textile industries cannot be estimated with accuracy. The editor of the *Transactions* (1783) believed, though he did not positively assert, that "the great improvements in spinning, which have taken place within twenty years in these kingdoms, particularly in the cotton works in Lancashire, Derbyshire, Nottinghamshire, etc., are to be assigned to the premiums offered and paid by this society." [42] Such a view is of course unverifiable. Indeed, the evidence justifies the conclusion that the work of the society, though important, was but one of a number of manifestations of a very general interest in the improvement of the instruments of production.

The facts of the case abundantly warrant the statement that the people of the time were extensively interested in mechanical improvement. Men were stirred by a keen sense of change and readjustment reaching to the material foundations of society. The general aim, which constituted the first phase of the prevailing spirit of invention, was to bring about a more effective utilization of the material environment. To that end, as the second phase, men devised new instruments and processes. The final phase was the application of these inventions to productive enterprises.

The mechanical revolution was not the work of a few individuals frequently opposed and unrewarded; it was rather the creation of social forces finding expression, to be sure, in the

[41] *Transactions*, Vol. 1, pp. 32, 217, 218; Vol. 2, p. 338; Vol. 3, p. 292.
[42] *Transactions*, Vol. 1, pp. 32, 33.

work of individuals, but even more significantly in governmental patronage and in organized, cooperative activities. The men who grasped the new machines and by means of them attained wealth and power in a newly forming industrial society—the great manufacturers—were utilizing instruments which were in their origin distinctly social.

## CHAPTER II

### The Economic Basis of the New Industrial Group

The preceding discussion has viewed the great inventions as the natural outcome of a remarkable and widespread outburst of inventive interest and activity. The great manufacturers in a few cases contributed personally to the stock of new inventions, but in most instances they merely utilized the devices of other men—of men who labored not so much because of hope of reward from the manufacturers for the use of their devices as because of the inspiration of the prevailing spirit of invention.

These new machines constituted the instruments of the power of the new industrial class. The industrial value inherent in the new machines was of course the result of their productive and competitive power. This is an obvious fact—so obvious, indeed, that its importance has perhaps not been duly recognized. To the people of the time, the fact was far from obvious or commonplace, nor was its importance without recognition.

By putting oneself in the place of a contemporary observer, and by remembering, too, that the eighteenth century mind was markedly rational and restrained, we may the more readily perceive the significance of the superlatives applied to the new inventions. They are described as "great and extraordinary;" "most wonderful;" "astonishing;" "amazing;" "almost miraculous;" "unparalleled in the annals of the world." Their effect is beyond description, but is likened to a sudden explosion. They have reached an "incredible" perfection, with productive value "beyond the powers of calculation." They give a facility to labor "scarcely conceivable." They have laid "the founda-

tions of a very extended commerce," and their effect on industry has been progress "rapid beyond example." The transformation is described by various writers as a "revolution." They have enabled the cotton industry to make "a gigantic stride," to attain an "enormous height," and to achieve a "progressive and astonishing increase." As a result of "ingenious machinery," the cotton industry "has burst forth as it were, on the country in a moment, giving a spring at the same time to the industry of the people, unexampled in the annals of the world." The inventions have caused Manchester goods "to spread in ten thousand forms and colors, not only in these kingdoms, but over all Europe; and even into distant continents." They are expected to produce "great changes ..... in the appearance of the civilized world," and the magnitude of their benefits "can scarcely be estimated." The "discoveries and improvements" of the early years of George III's reign "diffuse a glory over this country unattainable by conquest or dominion," and promise to "stamp a lustre" on his Majesty's reign "to the latest generations." [48]

Such are some of the terms of unmeasured praise recurring in the writings of the time in recognition of the productive value of the new machines. Most writers contented themselves with

[48] *Annals of Agriculture*, Vol. 9, pp. 286, 502, Vol. 10, pp. 253, 281, 579, Vol. 12, pp. 513, 514; *European Magazine*, Vol. 11, pp. 364, 367, Vol. 20, p. 216; *Gentleman's Magazine*, Vol. 57, Pt. 1, p. 465; *Transactions* (of the Society of Arts), Vol. 1, pp. 34, 35; *Encyclopedia Britannica*, 3d ed., Vol. 5, pp. 488, 489, Vol. 10, Art. *Manchester; Chambers' Encyclopedia*, Dedication, Vol. 1, pp. i, ii (1786); *Life of Robert Owen*, Vol. 1, p. 52; J. Aikin, *Description of the Country from thirty to forty miles round Manchester*, pp. 172, 174; T., *Letters on the Utility and Policy of Employing Machines to Shorten Labor*, pp. 4, 9; *New and Old Principles of Trade Compared*, pp. 32, 33; T. Gisborne, *An Enquiry into the Duties of Men*, p. 551; [Ogden], *A Description of Manchester ..... by a Native of the Town*, p. 90; *An Important Crisis in the Calico and Muslin Manufactory*, p. 1 (quoted by Mantoux, *La Revolution Industrielle*, p. 248); Anderson, *Historical and Chronological Deduction of the Origin of Commerce*, ed. 1789, Vol. 4, pp. 705, 706.

indefinite exclamations concerning the nature of the transformation, but some attempted definite statements or estimates. Crompton's machine often carried 150 spindles and drew weft "to an exact fineness up to 150 hanks in the pound." A tourist in the north of England wrote of the "incredible circumstance" of one pound of cotton having been spun by machinery into 356 hanks, each hank containing 840 yards, a total length of 169.9 miles. He adds that to enumerate the various kinds of cotton goods then made "would be to count the sands of the sea." Another writer marvels at the fact that "with one great water wheel, above 4000 threads of cotton yarn are spun at once, of which the finest muslins are manufactured." A manufacturer estimated in 1791 that by means of machines, "ability to spin was increased an hundred fold" in twenty years.[44]

The exact extent of the increase of productive power cannot be ascertained. The increase was by no means uniform, nor was it limited to a given period or to a given process or branch of manufacture. A modern estimate for the spinning of cotton yarn of forty hanks to the pound is to the effect that in 1812 labor was fourteen times more productive than in 1779 (a vast increase of productive power already having taken place), nine times more productive than in 1784, and four times more productive than in 1799.[45]

From the point of view of accuracy, the value of such estimates, either contemporaneous or recent, is extremely questionable. Indeed, to the writers of the time, the extent of increased productive power appeared to be measureable not so much by the perfection of mechanism and the resulting enlargement of out-

[44] Aikin, *Description of the Country ..... Round Manchester*, pp. 172, 174; *European Magazine*, Vol. 20, p. 216; Anderson, *Historical and Chronological Deduction of the Origin of Commerce*, ed. 1789, Vol. 4, pp. 705, 706; H. Wansey, *Wool Encouraged without Exportation*, p. 67.

[45] T. Ellison, *The Cotton Trade of Great Britain*, p. 55.

put, as by the rapid growth of those industries in which the labor-saving devices were being used.

It was estimated that the income from cotton manufacturing, including wages, increased from £200,000 in 1768 to £7,000,000 in 1788. The gross value of cotton goods, as late as 1781, was £2,000,000, while in 1787 it had increased to £7,500,000. In the processes of manufacture, the value of the cotton was increased 1000% to 5000%. In 1769, not more than 50,000 wheels were employed in spinning cotton; twenty years later, the number of spindles was nearly 2,000,000. The cotton spinning machinery in operation in 1789 could spin an amount equal to the output of one million hands with the spinning wheel. An estimate of the number actually employed in the factories for spinning cotton in 1788 was 110,000, almost half of the number being children. On this basis, the productive power of labor in spinning was increased by means of the improved machinery more than ninefold. The figures are probably exaggerated; but since the tendency to exaggerate applied to both sets of figures, the proportion would remain about the same. In the view of one writer, "the progressive and astonishing increase of this manufacture will be best explained" by the recent four-fold increase of cotton imports, which in 1787 amounted to 22,000,000 pounds.[46]

[46] Aikin, *Description of the Country ..... Round Manchester*, p. 178, ff. (including extensive quotations from *An Important Crisis in the Calico and Muslin Manufactory in Great Britain Explained*); *Annals of Agriculture*, Vol. 12, pp. 513-520; *Encyclopedia Britannica*, 3d ed., Vol. 5, Art. *Cotton* (written about 1790—see Bibliography). The figures given in *An Important Crisis* were used not only by Aikin but also to some extent by the other writers here cited. See critical note concerning this work in S. J. Chapman's article on *Cotton Manufacture* in the 11th edition of the *Encyclopedia Britannica*, Vol. 7, p. 285. It is not maintained that the figures cited above are accurate, nor did the writers themselves pretend an exactness of information. But there is significance in the fact that important writers of the time gave credence to the estimates in an attempt to state more definitely the extent of the remarkable growth of industry due to the new methods.

The rapid growth of industry in the new manufacturing centers was accompanied by a general economic expansion. Further evidences of the remarkable productive power and value of the new machines were observed by the people of the time in the rapid increase of wealth and growth of population resulting from their use, together with the shifting of wealth and population to the north of England.

The effect of the inventions on Manchester and the surrounding region was a subject of frequent comment and marvel. An indication of the change is to be found in the contrast between the accounts in the second and third editions of the *Encyclopedia Britannica.* The article on Lancashire in the second edition, published as late as 1780, mentioned in detail the streams of the shire, stating that the region was thoroughly watered, but otherwise the only significance assigned to the streams was to the effect that one of them "is noted for producing the fattest eels in England." The article on Manchester makes no mention of inventions, and merely states that the town is prosperous and has "several curious manufactures known at London by the name of Manchester goods." In the article on Lancashire in the third edition, there is a vivid picture of the industrial processes going on along the rivers and canals of the region. The article on Manchester [47] describes the rapid growth of the city in wealth, industry and population. It is estimated that the city trebled its population in fifty years, the immediately preceding years in particular having witnessed the building of innumerable houses and a rapid congestion of population, which is estimated at 68,580. The city was remodeled, and the new streets were "spacious and airy;" 2,000 street lamps were installed and nearly two hundred watchmen were employed by the city. It is estimated that 20,000 of its population were employed in the fac-

[47] From internal evidence it is ascertained that this article was written in 1792. See Bibliography.

tories connected with the cotton industry. The remarkable progress of the city is specifically credited to "the happy concurrence of ingenuity and industry" and "the astonishing improvements daily making in its numerous manufactures."

The rate of increase of population is not definitely ascertainable. That it was extremely rapid is evidenced by the following vital statistics [48] comparing the years 1765-1767 with the years 1783-1785:

Average annual number of christenings, 1765-67 ..... 900
Average annual number of christenings, 1783-85 .....1838
Average annual number of marriages, 1765-67 ..... 367
Average annual number of marriages, 1783-85 ..... 807
Average annual number of burials, 1765-67 ..... 811
Average annual number of burials, 1783-85 .....1468

A tourist in 1791 ventured to estimate the population of Manchester as having doubled in thirty years, but even this increase had fallen far short of the increase of wealth—the city has been "enriched by the cotton manufactory beyond the powers of calculation." To another observer, the "prodigious numbers of people" employed there is "almost incredible." [49] The growth of the place is further evidenced by data in contemporaneous city directories. During the transition, several directories were published, including the years 1773, 1781, 1788, and 1794. The number of names of "principal inhabitants" (such alone were included) in 1773 was 1530; in 1781, 1920; in 1788, 2580; and in 1794, 5444. Probable variations in the proportion of "principal inhabitants" to the total population lessen the value of the figures. Perhaps more significant is the increase in the number of thoroughfares listed. The number of thorough-

[48] In Manchester *Memoirs*, Vol. 3, pp. 163-167 (compiled by Thomas Henry, F. R. S.).

[49] *European Magazine*, Vol. 20, p. 216; G. A. Walpole, *New British Traveller*, p. 470.

fares included in the directory of 1773 was 167; 1781, 197; 1788. 260; and 1794, about 600. The number given for 1794 followed an extensive remodeling of the city, and the statement is made that 61 of the streets had been "laid out but not built upon." Before the remodeling of the city, the tendency seems to have been to concentrate the new population on the existing thoroughfares; afterwards, a tendency toward dispersion naturally existed. [50]

The growth of the city was not entirely the result of the new inventions; but their preponderant influence was recognized throughout the country, and particularly at Manchester. The general view was expressed by one of Manchester's leading citizens, the Rev. Dr. Thomas Barnes, when he spoke of Manchester as a town "the opulence, and even the very existence of which, depends on manufactures, and these again upon arts, machinery, and invention." Again, we read that if it were not for "the engines for carding and spinning cotton wool ..... the trade of this country [the region of Manchester] could never be carried on to any great extent." Another writer even more explicitly asserted the relation between invention and industrial growth. The success of the attempts "to substitute mechanical for human power," by making production cheaper, more expeditious and more perfect, "has expanded the villages of Lancashire into towns next to the metropolis." [51]

The effect of mechanical power at Manchester was remarkable; so also was its influence at Birmingham and in the regions

[50] Compiled from Directories as quoted and described in John Harland's *Collectanea Relating to Manchester and Its Neighborhood*, pp. 119-154 (Vol. 68 of Chetham Society Publications).

[51] Manchester *Memoirs*, Vol. 1, p. 89; *Annual Register*, 1779, pp. 228, 229 (Chron.); *Annals of Agriculture*, Vol. 9, pp. 534, 535. See also the emphatic protest of the Lancashire justices in 1779 against the riots of that year, on the ground of Lancashire's dependence on the new machines: *Annual Register*, 1779, p. 233 (Chron.); *Gentleman's Magazine*, Vol. 49, p. 609.

surrounding these cities, in Staffordshire, and at Liverpool, the commercial metropolis of the regions undergoing industrial transformation. But the iron and pottery industries experienced a much slower progress; and moreover, the progress in these industries depended on local resources even more than on mechanical improvement. The cotton industry was virtually destitute of local natural resources, and was unsupported by the power and prestige of men of the class of Matthew Boulton the iron master; and the revolution in this industry was in a unique sense a creation of machines. In the regions around Manchester the change was almost as marked as at the metropolis. Manchester is described as the "center" of the new system, the whole of which had developed with a "rapid and prodigious increase ..... unparalleled in the annals of trading nations." Various other towns are described as "sub-centers, or satellites around Manchester;" and "the whole intervening country takes its character from its relation to them." Again, the neighboring sub-centers are described as "appendages" or "branches." "Manchester is the stock of that vast tree which has lately grown with such wonderful rapidity, and spread its branches through so large an extent of country,—the cotton manufacture." The extent of the spread of power spinning impressed a tourist in 1791 as being so vast that it could be but temporary, "for there is scarcely a stream that will turn a wheel through the north of England that has not a cotton mill upon it." [52]

The increase of population in the north of England was not confined to the new manufacturing centers, but wherever observed, it was attributed by many writers to the influence of the industries in these centers. The increase in the agricultural regions and in the port towns was a subject of frequent comment.

[52] Aikin, *Description of the Country ..... Round Manchester,* pp. 3, 4, 176 (see also a review of Aikin's work in the *Analytical Review* of November, 1795); *European Magazine,* Vol. 20, p. 140.

The country parishes around Manchester and Birmingham sent streams of population to these towns, and yet the country regions themselves increased in numbers of people. This was due, it was held, to increased demand for farm products by the people of the new manufacturing centers, just as migration from England to the colonies creates a demand for English goods in the colonies, and by adding to opportunities for employment leads to an increase of population at home. The manufacturing industries not only created an increased demand for farm products, but also fostered various subsidiary industries. Thus the growth of population, wealth, and land values in the regions around Manchester and Birmingham, as well as in these cities, is accounted for by the productive power of the new methods of manufacturing.[53]

The industrial expansion in the north of England was a national as well as a local asset. The ability of the country to meet the financial demands of war and extravagant administration was attributed by some writers to the increase of wealth due to invention. "The genius of Watt, Wedgwood, and Arkwright has counteracted the expense and folly of the American war." The vast increase in wealth and revenues was primarily attributed by William Pitt in 1792 to the same cause.[54]

The remarkable development of the north was vividly described by Arthur Young, who wrote in 1792 that "all the ac-

[53] Rev. John Howlett, *An Examination of Dr. Price's Essay on the Population of England and Wales*, pp. 6, 15, 16, 22, 132, 151, 153; Howlett, in *Gentleman's Magazine*, Vol. 52, p. 475; J. Wilson, *A Letter, Commercial and Political, Addressed to the Rt. Honorable William Pitt*, pp. 6, 7, 24 (on authorship, see Bibliography); Aikin, *Description of the Country ..... Round Manchester*, pp. 5, 6, 176; *Annals of Agriculture*, Vol. 7, pp. 463, 464, Vol. 16, p. 552, Vol. 19, p. 254; Radcliffe, *Origin of the New System of Manufacture Commonly Called "Power Loom Weaving,"* pp. 59, 60, 65, 66.

[54] Wilson, *Letter, Commercial and Political*, pp. 6, 7; *Increase of Manufactures, Commerce and Finance*, p. 99; *Parliamentary History*, Vol. 29, p. 833.

tivity and industry of this kingdom is fast concentrating" there, and the whole kingdom is seeking "as immediate a connection with coals and manufactures, by means of inland navigation, as possible." [55]

This expansion of northern industries by virtue of mechanical power was not without cost to less progressive industries. Indeed, one of the chief manifestations of the productive power of the new machines was the outrivaling of old, established, distinctly national industries by the cottons, exotic, laboring against monopoly, tradition, and various legal disadvantages. and supported merely by superiority of method.

Comments concerning the encroachment of cotton fabrics upon wool, linen and silk are very general. We are told that at Wigan, "the cotton manufactory, as in all other places [about Manchester], intrudes upon the old staple of the place." The wool manufacture at Kidderminster is described in 1773 as "in a very flourishing state;" but in 1780 the same writer finds a condition of decay and poverty. The war is given as one cause of decline, but the rivalry of cotton is emphasized. "Cotton stuffs are now (1780) universally preferred to worsted stuffs, and to mixtures of worsted and silk." [56]

The encroachment of "Manchester goods" upon the so-called "staple" was indeed "universal," that is, national rather than merely local, and was so serious as to arouse grave fears in the minds of public men as well as of woollen manufacturers. Dean Tucker complained of "the prodigious disuse of coarse woollen goods throughout every part of the kingdom," owing to the fact that silks, cottons and linens, "combined in a thousand forms, and diversified by names without number, are now almost

[55] In *Annals of Agriculture*, Vol. 16, p. 552.

[56] Aikin, *Description of the Country ..... Round Manchester*, pp. 294, 406, 438; T. Nash, *Collections for the History of Worcestershire* (quoted in *Gentleman's Magazine*, Vol. 52, pp. 485-487); *European Magazine*, Vol. 20, p. 140.

the universal wear." Another writer (Ruggles) complained in 1790 that "every woman in the kingdom is clothed in these ..... [cotton] fabrics; most of our household furniture [furnishings] is made of them." He, as well as other writers, urged that the use of cottons should be discouraged officially; and he referred approvingly to the action of a local society in opposing the popular consumption of cotton goods. A dealer in woollens expressed the fear that woollen manufacturers and their families would be driven "in quest of bread to Manchester," the iron manufacturing centers also being mentioned in the same connection as outrivaling other industries. Lord Sheffield accounted for the decline of the West of England woollen manufactures in two ways: because of "the use of Manchester goods in many articles wherein superfine woollens were formerly used;" and because of migrations from the West of England to the West Riding of Yorkshire. [57]

The latter part of Lord Sheffield's explanation of the decline of the West of England woollen industry—the migrations to the West Riding of Yorkshire—is suggestive of another important manifestation of the productive value of machines, namely, the superiority of the more progressive woollen manufacturers over those who failed to adopt the machines. For in the West of England, the woollen manufacturers were slow in making the transi-

[57] Josiah Tucker, *Reflections on the Present Low Prices of Coarse Wools*, pp. 8, 9 (for an extract from his proposed method of enforcing the use of woollens by a system of virtual serfdom or peonage, see Bischoff, *Comprehensive History of the Woollen and Worsted Manufactures*, Vol. 1, pp. 225-228); T. Ruggles, *The History of the Poor*, Vol. 1, pp. 99, 195; *A Woollen Draper's Letter on the French Treaty*, pp. 27, 28; John Lord Sheffield, *Observations on the Manufactures, Trade and Present State of Ireland*, p. 190. See also *The Contrast; or, A Comparison between Our Woollen, Linen, Cotton and Silk Manufactures*, pp. 14, 48, 49; *Historical and Political Remarks upon the Tariff of the Commercial Treaty* [with France], pp. 166-168; *Gentleman's Magazine*, Vol. 52, p. 137; Radcliffe, *Origin of ..... Power-Loom Weaving*, p. 61; W. Cunningham, *Growth of English Industry and Commerce in Modern Times*, Pt. 2, pp. 625, 654, 655.

tion, while in the West Riding of Yorkshire the transition followed quickly upon the revolution in cotton manufacturing. A woollen manufacturer, arguing in 1791 for the introduction of machines into the western counties, wrote that the manufacturers of Yorkshire, "by dint of such machines and engines, not only use all their wool, but send down into the west country and buy it up out of the very mouths of the wool dealers and clothiers, and thereby take our trade with it." [58]

The effects of the new devices on the growth and shifting of wealth, population, and domestic competitive power constitute an impressive demonstration of the economic basis of the new manufacturers in the productive value of mechanical methods. Not less important is the increase of competitive power in overseas markets, resulting from the use of the new machines. This was indeed to the people of the time the chief justification for their introduction, the chief argument in extenuation of admitted evils of temporary unemployment and maladjustment.

In the decades immediately preceding the transition, the question of the effects of labor-saving machines was discussed theoretically by various writers, and the consideration most frequently urged in favor of machines was their value in enabling England to compete with other countries. As the transition progressed, and practical opposition to labor-saving machines developed, the same argument became the chief defense of the champions of the new order.

In the early, theoretical aspects of the controversy, it was

[58] H. Wansey, *Wool Encouraged without Exportation*, p. 69. To the same effect as the statements by Wansey and Sheffield are various others. See for instances the statement by another woollen manufacturer, John Anstie, *Observations on the Importance and Necessity of Introducing Improved Machinery into the Woollen Manufactory*, pp. 10-14; and by Sir Joseph Banks, P. R. S., in the preface to a pamphlet, *Observations on a Bill Relating to Wool*, etc., p. v. See also *Annals of Agriculture*, Vol. 9, pp. 503, 504; *Annual Register*, 1780, p. 197 (Chron.), 1781, p. 196 (Chron.).

held that command of trade depends on the relative cheapness of the commodities offered for sale. England, by reducing the price of its commodities, by means of labor-saving inventions, is not taking work away from its own laborers; it is by that means retaining markets which would otherwise be lost to more progressive nations, or to nations where labor and other costs of production are cheaper. It thus prevents the loss of markets and in consequence the loss of employment by workmen. Indeed, it may by this means not only retain existing trade but gain new markets; and while this may "starve the rival workmen," is this not to be preferred to allowing other nations to starve our own workmen? But labor-saving inventions are to be desired not only because of their value in enabling the inventive nation to supply the existing demand in the world's markets but also because by cheapening commodities they increase the demand and lead to enlarged consumption and interchange. No sale can be so sure as that "founded upon cheapness of price," which guarantees "a sure and quick vent" for commodities. Labor-saving machines, in brief, are "of prodigious use in rendering commodities cheap, and maintaining great numbers of people." [59]

This theoretical justification of labor-saving machines is in accord with the views of later writers. The argument recurs in a multitude of forms. And to the theoretical argument was added the appeal to experience.

By way of contrast, it is interesting to observe the attitude toward French manufacturers before and after the transition. There is an account written in 1763 of a newly established cam-

[59] Sir James Steuart, *An Inquiry into the Principles of Political Economy*, Vol. 1, pp. 121-123; *Laws and Policy of England Relating to Trade*, p. 42 (quoted in *Political Essays concerning the Present State of the British Empire*, p. 213); W. Harte, *Essays on Husbandry*, p. 38; *Political Essays concerning the Present State of the British Empire*, pp. 168, 169, 209-219. The last-named work summarizes the controversy and cites various other authors.

bric industry in Sussex. It is stated that "the workmen that are now employed there are chiefly French;" but the hope is expressed that by the apprenticing of English children, "the secrets and mysteries" of French artisans may soon become known to Englishmen.[60] Two decades later, the superiority of English manufacturers, due to the use of machines, was so obvious as to lead them to support the treaty with France for opening up the French market.

An important export to France, as well as to other countries, consisted of fustians, the extent and importance of the fustian trade depending distinctly upon the new methods of manufacturing. A statement of the value of the fustian trade in 1785 was to the effect that "it brings home to us an annual return of above a million sterling from foreign nations;" and the trade was said to be more valuable than "an inexhaustible gold mine." In 1787 a member of the House of Commons told that body that he had seen Manchester goods worn in Normandy within a few miles of the chief rival French establishment; and these goods had forced their way into the French market in spite of governmental aid given to the French, the costs of freight, and risks of smuggling. Lord Sheffield stated that "Manchester goods are carried from England into France, and there sold as French manufactures." Arthur Young commented on the "almost miraculous" state of the cotton industry, and the ability of English manufacturers to import much of their raw cotton from France, pay a French duty of a penny a pound, work it up "under the double freights, insurance, and charges—land the fabric, under 12½ duty, and undersell those of France from 12 to 20 per cent and in some articles, much more."[61]

[60] *Museum Rusticum et Commerciale*, Vol. 1, pp. 174-177.

[61] J. Wright, *An Address to ..... Parliament on the Late Tax Laid on Fustian and other Cotton Goods*, p. 7; *Parliamentary History*, Vol. 26, p. 484; Sheffield, *Observations on the Commerce of the American States*, p. 28; *Annals of Agriculture*, Vol. 8, p. 482, Vol. 10, pp. 253, 254.

Young, in explaining this condition, assigned to the new machines the chief, though not the only influence, for the French, he said, were beginning to copy English machines. He attributed the power of English cotton manufacturers to "vast capitals," and "such a mass of attendant skill, invention, nerve, and vigor, that no competition can stand before them." It is stated unequivocally by another writer that the superiority of English manufacturers of ironware, silk, and hosiery, and chief of all of cotton goods, is one of "the amazing and happy effects of mechanical combinations." It is impossible, asserts a keen German observer of foreign as well as of English conditions, for the English to sell their goods cheaper than foreigners "otherwise than by the use of machines." Again we read that the effect of the use of the inventions, particularly in Lancashire, has been to enable Englishmen to produce their commodities "cheaper, more expeditiously, and more perfectly," and "to bring the various articles to market in that state of perfection which now so eminently distinguishes the fabrics of England from those of any other country." [62]

It is seen that theoretical writers anticipated the competitive value of machines; that the use of machines was accompanied by an "almost miraculous" power of English manufacturers; and that the superior competitive power of the English was commonly viewed as one of "the amazing and happy effects of mechanical combinations." To this view bore witness not only the various general writers cited above but statesmen and public officials as well and the manufacturers themselves. William Pitt,

[62] T., *Letters on the Utility and Policy of Employing Machines to Shorten Labor*, pp. 4, 5, 6, 9, 10; Wendeborn, *A View of England toward the Close of the Eighteenth Century*, Vol. 1, pp. 235, 236; Rev. A. C. Schomberg, in *Annals of Agriculture*, Vol. 9, pp. 534, 535. See also Kenrick, *An Address to the Artists and Manufacturers of Great Britain*, p. 18; *Historical and Political Remarks upon the Tariff of the Commercial Treaty*, p. 81; [William Eden], *A Short Vindication of the French Treaty*, p. 26.

in his great speech of February 12, 1787, in support of the treaty of commerce with France, made the mechanical superiority of English manufacturers the principal basis of the liberalism of the treaty. Josiah Wedgwood, testifying before a committee of the House of Lords in behalf of the manufacturers generally, stated that "there are articles of the utmost consequence to the manufactures of this kingdom, as they enable us to baffle all competition with foreign markets. ..... These are the machines, presses, dies and tools, in which the manufacturers of Great Britain excel all the world." [63]

The recognition by Englishmen of the competitive value of their inventions was closely connected with the interest manifested by foreigners and particularly the attempts by foreigners to apply them to their own industries. The Manchester manufacturers had become so powerful, we are told by a member of the House of Commons in 1785, as to be "the pride of this country and the envy of foreign nations;" and again we read that the English cotton industry "has excited the admiration and jealousy of all Europe." [64]

But the attitude of foreigners was by no means confined to admiration, envy, or jealousy. They attempted in various ways

[63] For characteristic views of public officials and manufacturers, see *Parliamentary History*, Vol. 25, p. 842, Vol. 26, pp. 384, 385, 395, 544; *Parliamentary Register*, Vol. 10, p. 214; Commons *Journals*, Vol. 37, pp. 882, 926; *Report of the Lords of the Committee of Council* (on Irish Resolutions, 1785), p. 56; *Minutes of the Evidence taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), p. 34; *Minutes of the Evidence taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), p. 148 (Wedgwood's statement quoted above); *Gentleman's Magazine*, Vol. 49, p. 609; *Annual Register*, 1779, p. 233 (Chron.); Sheffield, *Observations on the Commerce of the American States*, p. 28; *Letter from a Manchester Manufacturer to the Right Honorable Charles James Fox*, pp. 14, 15; Anstie, *Observations on ..... Introducing Improved Machinery into the Woollen Manufactory*, p. 15 and *passim;* Wansey, *Wool Encouraged without Exportation*, pp. 49, 67-70.

[64] *Parliamentary History*, Vol. 25, p. 489; *British Merchant for 1787*, p. 27 (by a writer hostile to the political views of the manufacturers).

to secure a knowledge of English devices and to make use of them in their own industries. They induced English workingmen and even master manufacturers and capitalists to go abroad They offered rewards to English inventors and artisans to induce them to settle abroad. They sent agents to England with letters of introduction by which they might secure access to English factories for the purpose of securing drawings and first-hand knowledge. They appropriated public funds for the encouragement of factories of the English type. They employed draftsmen to copy drawings and specifications from the British patent records. They sent representatives to investigate English machinery and methods. They offered to purchase English goods on condition that samples of the implements with which the goods were made were sent with the goods. They attempted to stimulate interest in mechanical improvement by public exhibits of models of English machines. The principal countries involved were France, Austria and the Empire, Prussia, Holland, Switzerland, and the United States. But to Englishmen the chief or at least the most successful of sinners against the attempted monopoly of their inventions was France. That the French early succeeded, by the aid of Englishmen, in securing and operating the new cotton machinery is attested by many witnesses. Arthur Young, for instance, in his *Travels,* speaks of Rouen as "the Manchester of France;" and factories there as elsewhere were established and conducted, he informs us, by Englishmen.[65]

[65] Concerning foreign interest in English inventions, see Commons *Journals,* Vol. 47, pp. 559, 560; *Parliamentary History,* Vol. 26, pp. 544, 552; *Parliamentary Register,* Vol. 10, p. 214; *Minutes of the Evidence Taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), pp. 148, 149, 249, 250; Wendeborn, *View of England,* Vol. 1, pp. 233, 234; Meteyard, *Life of Josiah Wedgwood,* Vol. 2, pp. 551, 552; Wheeler, *Manchester: Its Political, Social and Commercial History, Ancient and Modern,* p. 171; *Life of Robert Owen,* Vol. 1, p. 31; *Historical and Political Remarks upon the Tariff of the Commercial Treaty,* p. 89, n.; *The British Merchant for 1787,* p. 18 and *passim; A Complete Investigation of Mr.*

The experience of Englishmen with the competitive value of their inventions, combined with the various attempts of foreigners to obtain and apply them in their own industries, led to the adoption of a policy of monopoly.[66] In the absence of international patent laws, Englishmen naturally sought to preserve for their own use the advantages of their inventions by a purely national protective system; and other nations, not bound by an international system to respect the patent rights of Englishmen, naturally made it difficult for Englishmen to pursue their national policy with respect to patents effectively. Indeed, many held it to be impossible, and such a view was made the basis of opposition to more liberal trade regulations such as were embodied in the Irish Resolutions and the treaty of commerce with France, for it was held that since the competitive advantage due to superior machinery would be temporary, due to access of foreigners to English methods, it was necessary to continue the old protective system in commerce.[67]

Views concerning the difficulty of preventing foreigners

---

*Eden's Treaty*, p. 80 and *passim;* French, *Life and Times of Samuel Crompton*, pp. 191, 192; Sheffield, *Observations on the Manufactures, Trade, and Present State of Ireland*, pp. 200, 201; *Journal and Correspondence of William, Lord Auckland*, Vol. 1, p. 516; Young, *Travels in France*, 2d ed., pp. 523-530, 553, 554 (including quotations from French writers and manufacturers); F. Dumas, *Etude sur le traite de commerce de 1786 entre la France et l'Angleterre*, pp. 70, 152-157; G. S. White, *Memoir of Samuel Slater*, pp. 36, 37, 71, 283-298.

[66] It has been asserted that "the policy of endeavoring to retain the advantages of machinery for England alone was mooted, but never very seriously pursued, and it was definitely abandoned in 1825." (Cunningham, *Growth of English Industry and Commerce in Modern Times*, Pt. 2, p. 609). The evidence supports the view that such a policy was not merely mooted but seriously and comprehensively followed.

[67] *British Merchant for 1787*, pp. 18, 57-63; *View of the Treaty of Commerce with France*, pp. 8, 30-33; *Parliamentary History*, Vol. 26, pp. 493, 552, 576; *Minutes of the Evidence taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), pp. 253-255; *Report of the Lords of the Committee of Council* (on Irish Resolutions, 1785), pp. 70, 82.

from utilizing English inventions were, however, exaggerated in order to make the political arguments against commercial liberalism appear stronger. In any case the difficulty did not deter those interested from attempting to retain exclusive use of the machines, and this attempt assumed a number of forms. Legal protection was not the sole reliance. Writers and inventors were careful not to describe the machines in detail for fear of furnishing information to rivals. Workingmen were urged, on grounds of patriotism and self-interest, as well as because of the legal penalties, to refrain from taking abroad their skill and mechanical knowledge. Manufacturers closed their mills against visitors, the outer doors being kept locked to prevent the entrance of spies and foreign agents. The government was urged to provide proper rewards for inventors in order to induce them to refrain from going to other states with their inventions. The question aroused very general and persistent interest, and held a place of prominence in the controversies that raged around such policies as the Irish Resolutions and the treaty of commerce with France.[68]

The main support of those who sought to reserve to Englishmen the use of the new machines was a comprehensive system of laws to prevent the inventions or a knowledge of them from reaching foreigners.

Laws of this type were not unknown before the great transition to mechanical power, but the earlier statutes involved machines which were distinct forerunners of the later epoch-mak-

[68] [Ogden], *Description of Manchester*, p. 93; Baines, *History of the Cotton Manufacture*, p. 190; Kenrick, *An Address to the Artists and Manufacturers of Great Britain*, pp. 47, 48; T., *Letters on the Utility and Policy of Employing Machines to Shorten Labor*, p. 7 and *passim; Life of Robert Owen*, Vol. 1, p. 31; Julia Wedgwood, *The Personal Life of Josiah Wedgwood*, pp. 228, 229; Meteyard, *Life of Josiah Wedgwood*, Vol. 2, pp. 551, 552; Wheeler, *Manchester*, p. 171; *Parliamentary History*, Vol. 25, p. 941; Vol. 26, pp. 390-392; Commons *Journals*, Vol. 47, pp. 499, 1088.

ing textile inventions, namely, the stocking frame and the mechanisms used in the manufacture of silk. The law to prohibit the export of the stocking frame (7 and 8 William III, c. 20, secs. 3 and 4 in *Statutes of the Realm,* secs. 8 and 9 in Pickering's *Statutes at Large*) was based on the fact that by means of this invention "great quantities are wrought off in a little time," and the purpose of the law, as of later similar statutes, was to retain for Englishmen the exclusive benefits of the invention. Silk manufacturing as well as the hosiery industry had been carried on for a considerable period antedating the factory system by machinery of an extensive and elaborate type. This machinery was of Italian rather than English invention, and yet at length in 1750 it also became the subject of protective legislation (23 George II, c. 13).

This law, as well as a law of 1719 (5 George I, c. 27), sought by another means to safeguard mechanical skill—namely, by forbidding skilled workmen to leave the country and by imposing penalties upon any who induced or aided them to emigrate. There is no evidence that the main intent of the law of 1719 at the time of its passage was to protect English machines from foreigners, but it later acquired considerable importance in this connection.

The law of 1750 applied not only to the silk industry but forbade the export of tools and utensils and the emigration of workmen employed in the manufacture of woollens as well as of silks.

This law was but one of many forms of protection enjoyed by the woollen manufacturers. They had long had a monopoly of raw materials and of the home market, and their natural and legal advantages rather than their mechanical superiority, formed the chief source of their economic strength. When the newer industries, particularly cotton manufacturing, developed, their condition was the reverse of that of the woollen industry. Having neither natural nor legal advantages, the strength of the

cotton manufacturers depended primarily upon superiority of methods. Soon after the invention of improved spinning machines, the question of protecting them from foreigners by legislation similar to the laws protecting the hosiery, silk, and woollen manufacturers was raised in parliament, and the result was the law of 1774 (14 George III, c. 71), forbidding the export of tools or utensils used in manufacturing cotton or cotton and linen mixed. This law was used as a weapon against the rebellious American colonies, although the next year, 1775, witnessed a slight relaxation of the laws against the export of machines to the North American colonies (15 George II, c. 5).

The laws outlined above forbade the export of machines, but this was inadequate, because the machines might be reproduced abroad by means of models, sketches, or specifications. In 1781 this defect in previous laws was remedied by a new law (21 George III, c. 37) forbidding the export not only of the machines themselves but of models or plans or similar information concerning machines used in the manufacture of the principal textiles.

By 1782, another branch of textile manufacturing, in addition to spinning and weaving, had developed mechanical methods vastly superior to earlier processes. This was the printing of cloth, particularly of cottons and linens, by means of cylinders in place of blocks. In consequence, a law (22 George III, c. 60) was enacted to prohibit the export of machines used in printing, and also to forbid the emigration of artisans.

Legal protection was thus afforded textile manufacturers against the use of their machines by foreigners, but in the meantime there had also been developed in the metal industries a large number of devices and processes second only in importance to those in the textile industries. The manufacturers insisted,

particularly in connection with the Irish Resolutions of 1785,[69] that the laws be made to include the improvements in these industries. In 1785 a law (25 George III, c. 67) was enacted to prevent the export of machines and of models or plans of machines used in the iron and steel industry, and also to prohibit the emigration of artisans. In the year following, a law (26 George III, c. 89) supplanted the act of 1785 by a detailed list of tools and utensils. This law was temporary, but was renewed from time to time till 1795, when it was made permanent (35 George III, c. 38).

In 1825 a parliamentary committee favored the repeal of these laws, partly because of laissez-faire views, and partly on the ground that the existing state of the laws was so chaotic as to render enforcement difficult. In some instances licenses were granted for the export of machines legally prohibited, but according to a committee reporting in 1841, in the processes connected with spinning and weaving the policy of monopoly was maintained, licenses for the export of spinning and weaving machines never having been granted. Means were frequently found to evade the laws, but their enactment and the persistent adherence to the policy of monopoly afford significant evidence of public recognition of the productive and competitive power of the great inventions.[70]

This new power was thus recognized, guarded, and fostered in various ways by the people of the time. The fact that the transition was so rapid, and the fact that it was so largely con-

[69] *British Merchant for 1787*, pp. 57-63; *Minutes of the Evidence taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), pp. 148, 248-258.

[70] *Report from the Select Committee on the Laws Relating to the Export of Tools and Machinery*, 1825, pp. 2-9, 47-51; *First Report* and *Second Report from the Select Committee appointed to Inquire into the Operation of the Existing Laws Affecting the Exportation of Machinery*, 1841, particularly *Second Report*, p. iv.

fined to Britain, gave to the British industries affected an incalculable advantage. In a word, the singular productive and competitive power of the machine afforded an unparalleled economic basis for the rapid development of manufacturing enterprises, and out of these there arose a new industrial group—the great manufacturers.

## CHAPTER III

### The General Chamber of Manufacturers of Great Britain

It has now been seen that the inventions were in the first place essentially the result of a prevailing spirit of mechanical progress, consciously recognized and fostered by writers, by the government, and by the concerted efforts of various non-profit-making organizations. It has been shown, further, that the productive and competitive value of the new devices was widely recognized in the writings of the time, in the ready acceptance of machine-made commodities by consumers, and in attempts on the part of the government as well as of manufacturers to maintain for Britain a monopoly of their use.

The extensive manifestations of public spirit attending the transition favored a public-spirited control and utilization of the inventions. But other influences tended in the opposite direction—that is, in the direction of an organization of the new system of manufacturing on the basis of private initiative and private profit-making unrestrained by public control and conscious efforts to make the inventions minister to public welfare. Among these latter forces may be mentioned the prevailing dissatisfaction with the old system of public control of industry; the acuteness of party conflicts, which focused attention on political issues and maneuvers; the discrediting of the government during the crucial period of industrial transition by the failure of George III and his ministers in foreign and colonial policy and domestic reform; and the acceptance by Pitt and his followers of laissez-faire doctrines. During the earlier stages of the organization of mechanical production, the forces of individualism and

private gain therefore prevailed with slight restraint. The latent disadvantages of such an organization to the laborers and the public developed somewhat later under the influence of the pol icy of reaction and repression connected with the French wars into a system of industrial control essentially anti-social. But the disadvantages were at first not fully apparent, and the organization of the system assumed a form that was largely spontaneous, undirected, and unrestrained, and in consequence the benefits derived therefrom by the workers and the larger public were secondary and merely incidental to the benefits secured by the manufacturers who fashioned the system.

The individual members of the new group have in most instances remained obscure. Josiah Wedgwood of the Staffordshire p tteries, and Matthew Boulton, the Birmingham ironmaster, are probably the best known members of the group. Sir Richard Arkwright, whose name is most commonly associated with the origin of the factory system, had little to do with the organized activities of the group. By virtue of his control of patents, a fight was waged against him, which tended to unify the group but to isolate from it the man who, more perhaps than any other, was its creator. Even Arkwright's career is little known and has been the subject of numerous controversies rather than of well-informed discussion. Jedediah Strutt, the Derbyshire hosiery manufacturer and partner of Arkwright, is more frequently mentioned because of his inventions and his association with Arkwright than because of his work as a manufacturer. Robert Owen, whose career as a manufacturer began at Manchester, has left a remarkable and enduring record of his life in his autobiography, but his fame is based mainly upon activities and views beyond the scope of the present study. Thomas Walker, a prominent cotton manufacturer and exporter at Manchester, who represented Manchester in seeking the repeal of the cotton tax in 1785, and who was otherwise active in the new

group, is better known because of his political activities as a local Whig leader than because of his career as a manufacturer. Robert Peel, pioneer cotton printer of Lancashire, was also an inventor, and he has been rescued from obscurity mainly by means of the fame of his son, the first Sir Robert Peel, and of his grandson, the prime minister. The first baronet of the name had attained such eminence because of his father's wealth and his own manufacturing enterprises as to become in 1790 a member of parliament and a "very respectable gentleman," and he, therefore, because of his own career as well as that of his more illustrious son, was able to emerge from the obscurity of the workshop.

As for the manufacturers generally, they belonged to humble families, and most of them probably sought wealth without thought of fame; and their relations to the beginnings and organization of a group that was ultimately to control the country were for the most part dictated by the prospect of immediate economic advantage. If there were those who coveted a lasting reputation by means of industrial pursuits, they were forestalled in most cases by lack of "respectability" if not by lack of distinctive achievement.

That the members of the new group, particularly in the textile industries, were recruited from diverse and relatively humble classes is commonly recognized.[71] But notwithstanding their

[71] See Mantoux, *La Revolution Industrielle*, pp. 379, ff.; Hammond, *The Town Laborer*, pp. 7-11. For contemporaneous comments, see *Annual Register*, 1792, Pt. 2, p. 37 (Chron.); *Life of Robert Owen*, Vol. 1, pp. 22, 37, and *passim; Minutes of the Evidence taken before a Committee of the House of Commons* (on Irish Resolutions 1785), pp. 25, 30; *Minutes of the Evidence taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), pp. 227, 239; J. Wright, *An Address to ..... Parliament on the late tax laid on Fustian and other Cotton Goods*, p. 27; John Holt, *Survey of Lancashire*, 1794 (quoted by Hasbach, *English Agricultural Laborer*, p. 105); Gisborne, *An Enquiry into the Duties of Men*, p. 571. Comment on the humble origins and narrow outlook of the early manufacturers

varied and discrete origins, the new manufacturers early showed a marked tendency to become differentiated into a distinct class.

An evidence of this tendency is to be found in the spirit of antagonism between the landed classes and new manufacturers. This was perhaps due in part to the disruption of the old established stratification of agricultural classes. The yeomanry tended to become absorbed in the new industrial classes; a few of the yeomen became capitalistic manufacturers, but most of them, in the region of Lancashire, probably became factory workers. The new industries also interfered seriously with the preeminence of the aristocracy. There is complaint of the "inundation of *new men*," who "expel the ancient families, destroy the venerable mansions of antiquity, and place in their stead what seemeth good in their own eyes of glaring brick or ponderous stone;" and the country is urged "to preserve the memory of those persons and those houses whose light is in its wane." The same tendency is observed by another writer, who, instead of lamenting, rejoices in the rewards of industry in the form of elegant houses supplanting the old mansions in the region of Manchester and Preston. In reference to the latter town he says that "from the number of genteel families with which this town formerly abounded, it got the epithet *proud*. Trade and manufactures have made a revolution in this matter," however, and "instead of cards, therefore, for killing time, cards are used by which thousands may live." [72]

---

is interestingly illustrated by the cases of two of the greatest and wealthiest of the cotton manufacturers who, in 1785, while expressing their intention to remove their enterprises to Ireland, stated before parliament that they had never visited that country.

[72] Aikin, *Description of the Country ..... Round Manchester*, pp. 23, 44, 192, 205, 206, 283, ff.; Holt, *Survey of Lancashire*, 1794 (quoted in Hasbach, *English Agricultural Laborer*, p. 105); *The Topographer*, Vol. 1, (for 1789), Preface, pp. iii, iv (London, 1789); *European Magazine*, Vol. 20, pp. 216, 217.

The spirit of disdain assumed by the landed class toward the manufacturers is illustrated by the experience of Cartwright, whose social status was compromised by his ventures in manufacturing; by the faint praise accorded Arkwright upon his death, who was criticised for his frugality and crudeness, and described as a useful though not a great character; and by the custom in Lancashire of denying to manufacturers the privilege of becoming magistrates. A moralist of the time observed this tendency, and he condemned "the aristocratic prejudices and the envious contempt of neighboring peers and country gentlemen ..... who ..... disgrace themselves by looking down on the man raised by merit and industry from obscurity to eminence." [73]

At Manchester this attitude was early apparent, and group antagonism was reciprocal. Evidence to this effect is found, for instance, in the writings of a Manchester clergyman, Rev. Thomas Bancroft, giving expression to the hostility between the manufacturers and the aristocracy, and to the growing class consciousness of the former, and foretelling the destined preeminence of the industrial group of the north of England. Bancroft, as early as 1777, in poems in the form of letters addressed to a friend at Cambridge, described the manufacturing activities at Manchester ("Mancunium"), and continued:

"This is fustian, rank fustian, I hear you exclaim;
But be gentle, my friend, ere you damn it to fame."

And concerning Manchester's busy industrial leaders, whom the aristocracy looked upon as "servants around," he wrote:

[73] [Strickland], *Memoir of ..... Edmund Cartwright*, pp. 84, 85; *Annual Register*, 1792, Pt. 2, p. 37 (Chron.); Hansard's *Parliamentary Debates*, Vol. 26, p. 100; Gisborne, *An Enquiry into the Duties of Men*, p. 571. For a similar discussion, based on the view that "in the school of Mr. Burke, trade and manufactures sound meanly," see J. Wilson, *A Letter, Commercial and Political*, pp. 32, 33.

"Such are England's true patriots, her prop and her pride;
They draw wealth from each state while its wants are supply'd;
To mankind all at large they are factors and friends,
And their praise with their wares reach the world's farthest ends.

. . . . . .

Is it then, ye vain lordlings! ye treat us with scorn,
Because titles and birth your own fortunes adorn?
What worth to yourselves from high birth can accrue?
Are your ancestors' glories entailed upon you?
And is your lazy pomp of much use to a nation?
Are not parks and wide lawns a refined devastation?
But peace—'t is presumption,—too much would demean 'em
To hold converse with upstarts, *a vulgus profanem.*
Their blood in pure currents thro' ages conveyed
It were impious to taint with the contact of trade."

In a succeeding letter he describes the early vicissitudes and later triumphs of Industry in Venice and Holland, and in prophetic strain foresees the shifting of power in England to the industrialized north of England:

"At length (thanks to heav'n) she is freed from her thrall,
And her weeds has thrown off to reign empress o'er all.
Yet her mansions in chief she has fixed on our shore,
Where freedom and justice maintain her in power.
See around—but around it were needless to roam;
For the climax reversed, we may look nearer home.

. . . . . .

For thy glory, Mancunium, these tributes are paid."[74]

The new manufacturers, it is evident, became serious rivals

[74] Quoted in John Harland, *Collectanea Relating to Manchester and Its Neighborhood*, Vol 2, in Chetham Society Publications, Vol. 72, pp. 216-218.

in the north of the aristocracy, and began early to assume a position as a distinct and important group, so that it was no longer possible for "the indolent and ignorant Great" to class them with the laborer and "confound them indiscriminately with the refuse of mankind." [75]

Many of the manufacturers had indeed emerged from what the "Great" were often disposed to look upon as "the refuse of mankind." But their rise involved a strengthening of the barriers already existing between employers and employees in manufacturing enterprises; and the enlargement of these barriers is another manifestation of the early differentiation of the new manufacturers from other groups. The idyllic pictures of the domestic system of manufacturing painted by the opponents of the factory system must unfortunately be largely discounted; and in lace manufacturing, in hosiery making, in mining, and perhaps most notoriously of all, in agriculture, conditions were not markedly better than in the factories. Indeed, a study of the sources of factory labor in the late eighteenth century indicates that the condition of the working classes during the period of the present investigation was improved, or in any case was prevented from becoming worse, by means of the opportunities afforded by the factories. [76] But aside from the question of welfare, the factory laborers in any case began to assume the traits of a definite, distinct group; and the emergence of this new type, the industrial proletariat, during the late eighteenth century, sharpened the contrast between employer and employee, and further differentiated the new manufacturers from other groups.

The clear distinction between manufacturer and laborer

[75] W. Kenrick, *An Address to the Artists and Manufacturers of Great Britain*, p. 20 (applied by the author in a slightly different but similar sense).

[76] Such a study has been made by the writer, but the results of the study cannot conveniently be incorporated in the present paper.

was indeed largely the result of the transition to mechanical methods; but the differences between manufacturer and merchant had long been marked, and particularly so in the case of merchants in foreign commerce. The mercantile class, indeed, stood next in status and influence to the landed aristocracy, and both looked with condescension upon the petty manufacturers of the older type. The differentiation continued to a large extent during the early stages of the rise of capitalistic manufacturing, and was noted by Robert Owen, who contrasted the early cotton manufacturers about Manchester with "the foreign merchants, or rather the merchants in the foreign trade." A similar distinction was made by Robert Peel in 1785. The differentiation was not a result of the transition; it tended to survive from an earlier period. But it did not survive intact; and herein is the significance of the relations between merchants and manufacturers as an indication of the rise of a new capitalistic group of manufacturers. The older manufacturers, of a petty type, found it impossible to act as their own selling agents in the larger markets. But this was not the case with the new manufacturers, whose enterprises became highly capitalized and extensive in scope. They began in consequence to supplant the merchants and to assume on their own account the functions formerly monopolized by the trading class. This tendency seems to have been accelerated by the disasters to commercial houses resulting from the American Revolution and the extensive European economic coalition against England during the war. Goods were being shipped at the risk of the merchants, who suffered severely; while the capital invested in manufacturng remained intact. "Our manufacturers," we are told by a writer in 1793, "with their skill and their capital unimpaired, began early to explore new markets and to improve those already known; and from this date [the American Revolution] commenced that rapid increase of export to the Continent of Europe. ..... Since the last peace

[1783] ..... our manufacturers have almost universally acted as merchants, and shipped their goods on their own account." [77]

The fact that the new manufacturers were able, financially and from the point of view of business organization, to become their own factors in foreign trade indicates, furthermore, their differentiation from the older type of petty manufacturers. The contrast between the two groups was emphasized by the controversy in 1789 over the Piece Goods Bill, involving a duty on the sale by auction of certain types of goods,—a controversy described by speakers in parliament as a "competition between the small and the great manufacturers." A similar regrouping and conflict among woollen manufacturers was evidenced by the petition of West Riding of Yorkshire clothiers in 1794 against the tendency toward capitalistic organization in the region of the modernized woollen industry. The petitioners complained that the manufacture of cloth "with a very trifling capital, aided by the unremitting labour of themselves, their wives and children, united under one roof,"—a system which "has so happily long prevailed in Yorkshire, is now in danger of being broken in upon and destroyed," by a new system, "supported by great capitals," and carried on in "large factories." [78]

An exact comparison of the capital invested under the new organization of industry with the capital previously invested is impossible. Ideas of what constituted capital were not clearly defined. But by a study of the impressions made upon the people of the time, and by casual statements of individual incomes, it is evident that by 1790 there was an unprecedented development of capitalistic production. Robert Owen wrote of "the new

[77] *Life of Robert Owen*, Vol. 1, p. 37; *Minutes of the Evidence taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), pp. 20, 21; J. Wilson, *A Letter, Commercial and Political*, pp. 21-23; Aikin, *Description of the Country ..... Round Manchester*, pp. 182, 184.

[78] *Parliamentary Register*, Vol. 26, pp. 444-447 (1st pt.); Commons *Journals*, Vol. 44, pp. 544, 545, Vol. 49, pp. 276, 277.

great cotton lords," and incidentally of one man in particular, who, about 1790, "made seventeen thousand pounds of profit in each of two successive years," and "had made great advances to become a first-rate and leading 'cotton lord.'" Various cotton manufacturers testified in 1785 that they paid from £20,000 to £26,000 a year in excise taxes alone. It was stated at Arkwright's death in 1792 that his son and daughter each received £200,000, and that his cotton factories were "worth as much more." The increase of wealth among the woollen manufacturers in the more progressive centers was also very marked. An estimate was made in 1791 that manufacturers then living, who had begun business with very small capitals, were then worth £500,000, and in one or two cases, not specified, worth even more. Such sums, in contrast with the petty capitals ordinarily invested in manufacturing, and in view of the relatively large purchasing value of money, are of no mean significance. The capital invested in manufacturing enterprises about Birmingham and in Staffordshire by such men as Boulton and Wedgwood was also very extensive. But the value of the metal industries, and even of the potteries, was perhaps more largely a gift of nature than a creation of the new methods.[79]

The wealth of the new manufacturers, their power at home and in foreign commerce, and their claims to public recognition, were matters of frequent comment. Arthur Young, who seems never to have lost an opportunity to contrast the skill, enterprise, and scorn of legal support on the part of the new manufacturers with the conservative, petty, and monopolizing spirit

[79] *Life of Robert Owen*, Vol. 1, pp. 31, 40; C. S. Parker, *Sir Robert Peel*, Vol. 1, p. 4; *Minutes of the Evidence taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), pp. 8, 18, 30; *Parliamentary History*, Vol. 25, pp. 838, 852; *Gentleman's Magazine*, Vol. 55, Pt. 1, p. 449; *Annual Register*, 1792, Pt. 2, p. 37 (Chron.); *Annals of Agriculture*, Vol. 17, p. 114; *Thoughts on the Causes of the Present Failures*, pp. 5, 7, 13, 14.

of the older types, attributed the superiority of the former in part to machines and in part to larger capital. Go to France, he exclaims, with characteristic exuberance, and look for such a man as Arkwright, and you will look in vain. "Can one man, with 6 or £8,000 capital, bear the rivalry of another, with £100,000?" [80]

It was inevitable that the newly risen "lords" of industry should demand political recognition. In the debates of the time on the corn laws, the navigation system, taxation, and commercial laws and treaties in general, their economic status and their interests were reiterated in various forms. In connection with the debates on the treaty of commerce with France (1787), it was asserted by a member of parliament that the manufacturers were mentioned by every speaker. The statement was almost literally true. A member of the House of Lords asserted that, weighed in the balance with men of such ingenuity and enterprise as certain of the new manufacturers, "ministers and anti-ministers would together kick the beam." [81]

In view of their status and the recognition of their importance, and in the light of the current agitation for the reform of parliament, it is naturally to be supposed that the new manufacturers would have sought to bring about a change in the electoral and representative system such as would have given them a proportionate voting power in the House of Commons. The press and political leaders in favor of a reform of parliament were not slow to seize upon the growth of the new industrial class as an argument for reform. It was indignantly asserted that "the monied interest is not represented at all." The

[80] In *Annals of Agriculture*, Vol. 7, pp. 272, 273. See also, Josiah Tucker, *Four Tracts on Political and Commercial Subjects*, pp. 34, 35; Commons *Journals*, Vol. 36, pp. 15, 239, 953, 954; *Thoughts on the Causes of the Present Failures*, p. 13; *Increase of Manufactures, Commerce and Finance*, pp. 40-47, 59, ff.

[81] *Parliamentary History*, Vol. 26, p. 494; *Parliamentary Register*, Vol 18, p. 34 (2d part).

greatest manufacturer or merchant "has not the privilege of a beggar in a Cornish borough. Accordingly, the great manufacturing towns of Manchester, Birmingham, Sheffield, &c., have no representation in parliament." Similar contrasts were repeatedly made by Wilkes, Fox, and various others.[82]

And yet it is a singular fact that the manufacturers themselves were indifferent in respect to reform. During the period of most vigorous and most general agitation, when petitions in large numbers from nearly every part of the country assailed the House of Commons, the new industrial centers were not enough interested to send petitions.[83] The absence of such petitions, in spite of the many appeals to these regions to support reform, afforded the opponents of reform an opportunity which they cleverly utilized. A speaker in 1783 (Mr. Powys), in opposing Pitt's motion for a reform bill, minimized the importance of various petitions. "Manchester and Birmingham, however, he was determined to hear, and to pay particular attention to. They were great trading towns, and their petitions ought not to be slightly passed over, in the usual manner. ..... He must have the whole of what they contained explicitly and distinctly made known to the House, and for that purpose desired the clerk to read them. The clerk turned over and over again; but no such petitions being found, he told Mr. Powys that neither Manchester, Birmingham, nor Sheffield were in the list. Not in the list! said Mr. Powys—good God, what a misfortune!" Lord North also called attention to the lack of petitions from these re-

[82] *Political Register*, Vol. 2, pp. 224, 225; *Parliamentary Register*, Vol 3, p. 439; *Parliamentary History*, Vol. 18, p. 1292, Vol. 23, p. 863, Vol. 24, p. 999, Vol. 30, p. 789.

[83] Commons *Journals*, Vol. 39, January to May, 1783; Vol. 40, February to April, 1785. During the revival of reform agitation in connection with the French Revolution, these regions continued indifferent to the movement. A petition from Sheffield in 1793 (*Parliamentary History*, Vol. 30, p. 776) is an exception, but the tone of the petition indicates that its basis was not economic but political—an outgrowth of revolutionary sympathies.

gions, and twitted the proponents of reform for having taken great pains to secure petitions with the result that they were able only to say: "What horrid sound of *silence* doth assail mine ear?" [84]

There is further and more positive evidence of the indifference of the new manufacturers to parliamentary reform. Even Fox, who at the time was representing himself as a champion of the manufacturers, and who would eagerly have availed himself of any evidence of their interest in reform, explained their indifference on the ground that they were "threatened with ruin" by the cotton tax of 1784 and by the Irish Resolutions of 1785, and were "on the eve of emigration" to Ireland and elsewhere, and for that reason considered it "no time ..... to set about making improvements in the constitution." That the attempts of politicians to gain the support of the manufacturers in political issues was opposed by leading manufacturers is indicated by their own statements. [85]

Furthermore, there is evidence that the industrial classes at Manchester and Birmingham experienced a species of pride in their aloofness from politics, other than the promotion of economic policies directly involving their own interests. This aloofness existed in local as well as national politics. These cities not only had no representation in the House of Commons, but lacked as well the chartered privileges prized by many of the older cities. They were governed by an old and simple organization, in which the traditional restrictions of charters and gilds played no part. Manchester was ruled, indeed, by the steward of the Lord of the Manor. The manufacturers prided themselves on desiring to wear no "party-colored robes," and it was frequently

[84] *Parliamenary History*, Vol. 23, p. 837; Vol. 25, pp. 458, 459. See also *Ibid.*, Vol. 23, pp. 850, 851; Vol. 24, p. 988; Vol. 25, pp. 463, 466, 467.

[85] *Parliamentary History*, Vol. 25, pp. 466, 467; *The Journal and Correspondence of William, Lord Auckland*, Vol. 1, pp. 92, 93.

held that the lack of representation and the absence of chartered and gild regulations were among the chief advantages of these towns. For "thereby the attention of the industrious manufacturer can seldom be called off, by the interference of party interest; and that grand principle which should ever animate a flourishing commercial establishment universally pervades the great body of the inhabitants, that of *the uninterrupted application of each individual who composes it to his own peculiar concerns.*" [86]

It is apparent that the manufacturers of the new type were little interested in parliamentary representation, or even in local politics. For the most part they desired to be let alone and allowed "uninterrupted application" of their energies to their "own peculiar concerns."

But when their "own peculiar concerns," that is, their economic interests, were directly involved in affairs of politics, they were not slow to manifest an interest in political life. And it was this connection between their economic interests and politics that counteracted the individualistic tendency of the manufacturers and furnished the incentive for comprehensive group organization. But before the influence of politics upon the general organization of the manufacturers is discussed, mention should be made of earlier manifestations of the tendency toward organization.

A general organization was not without basis in preexisting local groups of manufacturers and merchants. Woollen manufacturers of York, Lancaster and Chester were organized with a semi-official status in 1777, and later the woollen manufacturers

[86] [Ogden], *A Description of Manchester*, pp. 93, 94; *A Companion to the Leasowes*, etc., pp. 15, 16; John Campbell, *Political Survey of Britain*, Vol. 1, p. 322; Aikin, *Description of the Country ..... Round Manchester*, p. 191; Wright, *An Address to ..... Parliament*, pp. 26, 27; Hammond, *Town Laborer*, p. 47.

of other regions were allowed to organize in a similar manner. Iron manufacturers of Salop, Worcester, Stafford and Warwick organized and held quarterly meetings previous to the general organization of the manufacturers in 1785. Organized bodies, made up in some places of merchants and manufacturers, in other instances of manufacturers only, existed in several of the leading towns, including Manchester, Birmingham and Liverpool.[87]

There was thus a local basis for a general organization. Suggestions, moreover, for a general organization had been made before 1785, and independently of the political situation in that year, out of which the actual organization emerged.

One of these suggestions was contained in a petition to the House of Commons as early as 1779. The organization therein proposed was for another purpose, however, and was to include only the cotton and linen manufacturers. This petition set forth the need for a reorganization of capital in manufacturing. It asserted that "a manufactory for making and printing cotton and linen cloths upon a more extensive plan than has hitherto been practiced would be of great benefit to the kingdom;" that for such a purpose, "a very large capital or joint stock" is necessary; that "several persons are willing to subscribe considerable sums of money for the purpose;". that the existing state of the law would make the subscribers individually responsible, and would impose many difficulties; and that a bill is desired, pro-

[87] Commons *Journals*, Vol. 37, pp. 393, 773; Vol. 39, pp. 250, 455; Vol. 40, pp. 78, 611, 647, 761, 867, 998, 1000, 1024; *Parliamentary History*, Vol. 25, pp. 365, 840; *Parliamentary Register*, Vol. 21, pp. 275, 276; *Minutes of the Evidence taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), pp. 47, 70; *Annals of Agriculture*, Vol. 10, pp. 402-418; *Gazetteer and New Daily Advertiser*, March 9, 1785; R. Brooke, *Liverpool as It Was during the last Quarter of the Eighteenth Century*, p. 232; J. A. Langford, *A Century of Birmingham Life*, Vol. 1, pp. 315, 316, 359.

viding for a special organization "into a separate and distinct body politic and corporate," with liberties and privileges subject to regulation by parliament. A bill to this effect was ordered, but the project was apparently dropped, and the organization of the new industries assumed a form highly individualistic instead of in accordance with the older type of quasi-public chartered company, prevalent in commercial enterprises. The idea was revived in 1788, although again without result, by Manchester manufacturers, who proposed to obtain permission to form a company modeled after the East India Company. [88]

Another suggestion for a national organization, broader in scope than that outlined above, was made in 1783. At that time it was proposed to form a "Chamber of Commerce," which was to be auxiliary to the government, furnishing information and advice in connection with commercial and industrial policies. It was suggested, apparently, by knowledge of the chambers of commerce on the Continent. [89]

Neither of these ideas was carried out. The actual organization included manufacturers other than those in the cotton and linen industries, as was proposed in 1779, but it included manufacturers only, excluding merchants, whom the plan of 1783 would have recognized prominently. It was not concerned primarily with the administration of business, as was the plan of 1779, and its relation to the government was different from the relations proposed in both of the earlier plans.

Organization was a natural accompaniment of the rise of the new manufacturers to a position of wealth and recognized importance in the economic life of the country. But the individualistic tendencies and the diversity of interests among the manufacturers raised up serious obstacles, and the stimulus nec-

[88] Commons *Journals*, Vol. 37, pp. 108, 147; Wheeler, *Manchester*, p. 175.

[89] *Plan of the Chamber of Commerce*, a work reviewed favorably in the *Gentleman's Magazine*, Vol. 53, Pt. 1, p. 331.

essary for organized unity was political. The needed stimulus was a common antagonism to the excise and Irish policies of the government of William Pitt.

In 1774, Richard Arkwright & Company had succeeded in securing the modification (14 George III, c. 72) of earlier restrictions on the manufacture, sale, and use of cottons, and the industry developed with unparalleled rapidity. Among the most urgent and most difficult of the problems confronting Pitt when he became head of the government in 1783 was the reorganization of finance. As a part of his fiscal policy he secured the enactment in 1784 of a new cotton tax, which considerably increased the amount of the revenue and provided for methods of collection extremely obnoxious to the manufacturers. This law (24 George III, c. 40) met with a furious storm of hostility, due less to the extent of the taxation than to "what is still worse," the fact that their "liberty and property" were "fettered and embarrassed." They objected to excise laws in general, but held that the cotton tax was the most harmful of excises because of "the amazing number of excise officers necessary," whose influx tends fatally "to disturb the harmony and arrangements of their manufactures, to deprive them of personal liberty, and the free exercise of their property." [90]

In view of the prevalence of high taxes and of excise methods not essentially different from those embodied in the cotton tax, the extreme hostility that the cotton tax aroused is explic-

[90] Commons *Journals*, Vol. 34, pp. 435, 436, 496, 497, 708, 709, 805, Vol. 40, pp. 642, 760, 819; *Minutes of the Evidence Taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), p. 66; *Minutes of the Evidence Taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), p. 222; *Parliamentary History*, Vol. 25, pp. 362, 365, 366, 480; *Parliamentary Register*, Vol. 17, p. 425, ff., Vol. 18, p. 91, ff.; Wright, *An Address to ..... Parliament on the Late Tax*, etc., pp. 37-55, and *passim; Gazetteer and New Daily Advertiser*, April 6, 15, 18, 1785; Dowell, *History of Taxation and Taxes in England*, Vol. 4, pp. 343-346.

able only on the grounds that it was in the first place, ill adapted to the new and complex system of mechanical and large-scale production in the cotton industry; and in the second place, out of harmony with the rising tide of individualism and laissez-faire, which was rapidly overwhelming the old system of governmental relations to industry.

Organized opposition to the excise first assumed the form of a committee of four manufacturers, including Thomas Walker, a local Whig leader, delegated by Manchester manufacturers to represent them at London in an effort to secure the repeal of the law. In January, 1785, Walker and one of his associates were brought before the Committee on Trade and Foreign Plantations and questioned concerning Irish relations, in an effort to secure from them, without their knowledge of the object of the questioning, statements which would commit them to the policy later presented to the public in the form of the Irish Resolutions. The statements made by the manufacturers on this occasion, which they understood was concerned with the cotton tax, were used by the government in an attempt to discredit the manufacturers by securing evidence of inconsistency and self-seeking, as well as to cause them to commit themselves unknowingly to the principles of the government's Irish policy. Walker and his associate were later repeatedly confronted with quotations from their statements, and cross-examined, and treated in a manner which was characterized by a member of parliament as "most scandalous."[91]

By such methods the government defeated its own ends with

[91] *Report of the Lords of the Committee of Council* (on Irish Resolutions, 1785), pp. 53-61; *Minutes of the Evidence taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), pp. 6, 47-90; *Minutes of the Evidence taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), pp. 185-190; *Parliamentary History*, Vol. 25, p. 837; Aikin, *Description of the Country ..... Round Manchester*, pp. 263, 264.

respect to the Irish Resolutions as well as the cotton tax. Manchester manufacturers were needlessly embittered, and were forced to associate the government's fiscal policy at home with its commercial policy toward Ireland; and they were provided with a *raison d'etre* for their skillful utilization of the influence of the whole body of manufacturers against both policies. Henceforth the two policies were inextricably joined, and the whole force of industrial influence was directed against both.

The Irish question, ever a thorn in the side, was rendered acutely piercing in the case of Pitt's government, 1783-1785, by pressure of disturbed conditions inherited from the preceding ministry. Pitt, recognizing Ireland's newly acquired legislative independence, was at once confronted with the problem of economic reorganization. His policy, formulated in the so-called Irish Resolutions or Propositions, came from the Irish parliament for consideration in the English House of Commons in February, 1785.

According to Pitt's own interpretation, his policy embraced two "capital points," namely, the admission of Ireland to participation in England's colonial and foreign trade (with certain restrictions), and the mutual reduction of tariffs on manufactured goods to the rate in that kingdom where existing duties were the lower. Various important exceptions, however, were made in favor of the landed class, merchants, and older types of manufacturers, while no attempt apparently was made to conciliate the newer manufacturers. For instance, the Irish had equal access to the raw materials and the implements and machines used in the cotton manufacture, whereas English wool of all descriptions, fuller's earth and other materials, and the tools and utensils used in the manufacture of wool were denied export to Ireland. The chief advantage to be gained by Ireland was by a provision that importations from foreign states were to be "regulated from time to time in each kingdom on such terms

as may afford an effectual preference to the importation of similar articles the growth, product or manufacture of the other." This provision, though stated in general terms, was primarily intended to secure the importation of Irish linens into England to the exclusion of foreign linens; and the English cotton, iron, and pottery manufacturers resisted this extremely illiberal policy of exclusion on the ground that it hindered reciprocal commercial relations with those countries which were seeking a linen market in England. [92]

The Irish Resolutions, like the cotton tax, encountered the fierce hostility of the newer manufacturers. The exclusion of foreign linens to the prejudice of reciprocal commerce was but one of many reasons for opposition as set forth by the manufacturers. Pitt himself, in his private letter of January 6, 1785, to the Duke of Rutland, Lord Lieutenant of Ireland, [93] quite frankly admitted the probability of the shifting to Ireland of certain English industries in consequence of the Resolutions. Many of the manufacturers shared Pitt's view—an attitude ill-

[92] The text of the Resolutions as they passed the Irish parliament and as outlined above may be found in *Parliamentary History*, Vol. 25, pp. 312-314. For text of the revised Resolutions, as amended in the English House of Commons, see *Ibid.*, pp. 934-942. The Resolutions were explained and interpreted in *Report of the Commissioners of Excise to ..... the House of Commons*, in *Report of the Commissioners for ..... His Majesty's Customs*, both published in 1785, and in *Correspondence between the Right Honble. William Pitt and Charles, Duke of Rutland, Lord Lieutenant of Ireland, 1781-1787*, particularly in Pitt's letter of January 6, 1785, pp. 55-75. See also J. H. Rose, *William Pitt and National Revival*, c. 11, and J. G. S. MacNeill, *Constitutional and Parliamentary History of Ireland till the Union*, c. 17. Concerning the attitude of the manufacturers toward the exclusion of foreign linens, see *Minutes of the Evidence Taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), pp. 181-183; *Minutes of the Evidence Taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), pp. 150-152, 176, 177; Lords *Journals*, Vol. 37, pp. 312, 323, 324; *Gazetteer and New Daily Advertiser*, March 23, 1785.

[93] Cited in the preceding footnote.

adapted to reconciling them to the government's policy. Such a view of the effect of the Resolutions was promoted by the fact that "so long as water power was the chief agent employed in manufacturing [and it was of course the chief agent in 1785], Ireland offered, in some directions, great attractions to capital." [94] These attractions, combined with alleged discriminations in policy in favor of certain manufacturers in Ireland, were set forth at length by the manufacturers as the basis of opposition to the Resolutions. [95]

The most important of the various arguments urged against the Irish Resolutions by the manufacturers was the contrast in the tax policies of the two kingdoms. Pitt himself admitted the force of the argument, first in private, and at length in consenting to the modification of the cotton tax. [96]

The vital connection between the Irish Resolutions and the question of taxation, particularly the excise laws, was set forth in resolutions of Manchester manufacturers, April 11, 1785. These resolutions provided for the appointment of delegates to go to Ireland to negotiate for the transfer of the cotton industry to that country. The manufacturers desired "to justify their conduct to their countrymen, for adopting a measure so repugnant to their feeling, and so ruinous to the nation, as transplanting the cotton manufacture." In order to do this, they set forth the evils of the excise laws, and contrasted "these de-

[94] Cunningham, *Growth of English Industry and Commerce in Modern Times*, Pt. 2, p. 846, *n.*

[95] These arguments are to be found in the petitions of the manufacturers in the *Journals* of the two houses; in the pamphlet literature of the time; and particularly in *Report of the Lords of the Committee of Council ..... Relating to Trade and Foreign Plantations, Minutes of the Evidence Taken before a Committee of the House of Commons*, and *Minutes of the Evidence Taken before a Committee of the House of Lords* (on Irish Resolutions, 1785).

[96] *Correspondence between ..... Pitt and ..... Rutland*, pp. 62-64; *Parliamentary History*, Vol. 25, pp. 323, 324, 338.

structive and obnoxious systems" with the "unbounded profusion" of advantages offered by the governments of both kingdoms to manufacturers in Ireland. Various manufacturers received attractive offers from Ireland, and many of them testified before parliament that if the Irish Resolutions were adopted, they intended to transfer their enterprises to Ireland.[97]

In the case of the cotton manufacturers, these threats were used in part as weapons against the cotton tax. "The Manchester people," wrote the Marquis of Lansdowne, "have contrived artfully enough to confound the taxes lately imposed on manufactures with the Irish propositions." It has already been seen, however, that the connection was virtually forced upon them in the first place by the government.[98] The connection between the two policies having been made, it was cleverly seized upon by the cotton manufacturers and made the means of uniting the manufacturers in general against the tax on cottons as well as against the proposed Irish settlement. Out of this situation, which gave to the manufacturers a feeling of common interest, arose the General Chamber of Manufacturers of Great Britain.

This organization was not limited to the new capitalistic manufacturers, but the initiative and the moving force were with them. The new capitalistic industries consisted in the main of three groups: Wedgwood's Staffordshire potteries; the iron foundries and plants about Birmingham; and the manufacturing

[97] *Gazetteer and New Daily Advertiser*, February 26, April 15, 18, 1785; *Minutes of the Evidence Taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), pp. 14, 16, 17, 19, 21, 22, 29, 32, 49-51, 59, 60, 66, 67, 76; *Minutes of the Evidence Taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), pp. 6, 10, 57, 172-174; Wright, *An Address to ..... Parliament*, p. 60; *Gentleman's Magazine*. Vol. 55, Pt. 1, pp. 234, 449.

[98] See above, pp. 66, 67; *Rutland MSS.* (Historical MSS. Commission), Vol. 3, pp. 201, 202; *Minutes of the Evidence Taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), p. 89; *Gazetteer and New Daily Advertiser*, April 18, May 2, 1785.

and printing of cotton centering at Manchester. Each of these groups participated spontaneously and in a measure independently in the movement for a general organization.

The part played by Josiah Wedgwood seems to have been the result of his hostility to the Irish Resolutions. On February 21, 1785, he wrote to Matthew Boulton, saying that he intended to recommend the organization of "a Committee of Delegates from all the manufacturing places of England and Scotland to meet and sit in London all the time the Irish commercial affairs are pending," and he was not without hope that such a body would be useful "upon others as well as the present occasion." He had his designer, John Flaxman, make drawings "for the manufacturers' arms," and enlisted the interest of Lord Sheffield, who was a bitter opponent of the Irish Resolutions. [99]

The share of Birmingham in the movement for organization is less clear. The manufacturers there were organized, however, and their local organization sent circular letters to the various manufacturing towns of the region, suggesting cooperation to oppose the government's excise policy. [100]

But the chief influence in the movement was exerted by the cotton manufacturers. This was recognized later by the Birmingham Chamber, which called upon Birmingham to emulate Manchester in its liberal support of the General Chamber. The cotton manufacturers had been active at London for some time in seeking the repeal of the cotton tax. Thomas Walker and three other Manchester manufacturers had been delegated by Manchester to work for its repeal. When the Irish Resolutions came up for discussion, and opposition developed, the Manchester manufacturers saw their opportunity and cleverly seized it. On March 3, 1785, a general meeting of fustian manufacturers was held at Manchester to consider the two questions—the tax

[99] Meteyard, *Life of Josiah Wedgwood*, Vol. 2, pp. 485, 495, 496, 539.
[100] *Parliamentary History*, Vol. 25, pp. 365, 366.

and the Irish Propositions. At this meeting they resolved to "correspond with every manufacturing body in the kingdom," in order to secure cooperation against what they designated the fatal combination of oppressive taxes at home and commercial favoritism to the Irish. It was further resolved that the action taken at the meeting should be published in the papers throughout the manufacturing region.[101]

Results were soon manifest. On March 12, it was reported that "manufacturers are assembling" at London from various parts of the kingdom. A meeting had already been held in London, at the London Tavern, on March 7; and the cotton manufacturers, having the advantage of a committee of delegates already in touch with the situation, secured action at this meeting which at the outset connected the Irish policy with the question of excise, and committed the manufacturers to a joint consideration of the two questions. Another meeting was called, which "all manufacturers" were requested to attend, but special invitation was accorded the representatives of the leading industrial centers.[102]

During the succeeding week, a committee was appointed, with Wedgwood as chairman. Associated with Wedgwood were John Silvester and Richard Walker, both of Manchester, and Robert Peel, the great Lancashire cotton printer. On March 12 this committee met and issued a call for another general meeting for March 14. At the meeting convened on the 14th, there was organized a definite body to be called the Chamber of Manufacturers of Great Britain, and to consist of "each member

[101] Langford, *A Century of Birmingham Life*, Vol. 1, pp. 328, 329, Aikin, *Description of the Country ..... Round Manchester*, pp. 263, 264; *Minutes of the Evidence taken before a Committee of the House of Commons* (on Irish Resolutions, 1785), p. 47; *Minutes of the Evidence taken before a Committee of the House of Lords* (on Irish Resolutions, 1785), p. 186; *Gazetteer and New Daily Advertiser*, March 9, 1785.

[102] *Gazetteer and New Daily Advertiser*, March 9, 12, 1785.

of a commercial committee, being a manufacturer." It was resolved unanimously that the society "do not cease with the present business," and to that end a permanent secretary, Henry Smeathman, was appointed, and steps were taken to perfect the organization.[102]

At the various meetings of the Chamber, the chairmanship was held by different men. At a meeting of March 10, previous to the formal organization, the presiding officer was Sir Herbert Mackworth, a manufacturer who, as a member of parliament and a man of social standing, lent "respectability" to the organization, an attribute deemed essential to the Chamber's influence. The chairman of the meeting of March 14 was Wedgwood, who, though not a member of the aristocracy, was nevertheless invested with a respectability denied to the more "vulgar" and less artistic textile manufacturers. The meetings of March 16 and 17 were presided over by Richard Walker of Manchester. On March 22, the chairman was Matthew Boulton of Birmingham. It is important to note that at this meeting, even more than at earlier meetings, the prominence of the cotton men was manifest. Mr. Silvester of Manchester, as head of the committee on organization, reported for the committee a plan of organization which was adopted. He stated that the committee had "received many letters from various parts of the kingdom, ap-

[102] *British Merchant for 1787*, p. 10; *Gazetteer and New Daily Advertiser*, March 9, 14, 15, 16, 1785. See also Meteyard, *Life of Josiah Wedgwood*, Vol. 2, pp. 540, 541, where it is intimated that the organization was begun and directed almost exclusively by Wedgwood. It is stated that Nicholson, an employee of Wedgwood, was secretary, and that Chisholm, Wedgwood's private secretary, formulated the regulations governing the Chamber. It is evident that Meteyard has grossly overemphasized Wedgwood's part. Nicholson was temporary secretary during an early meeting, and on a later occasion acted for the secretary (see *Gazetteer and New Daily Advertiser*, February 19, 21, 1787), but the first permanent secretary was Henry Smeathman; and the permanent organization was effected, as will be seen below, by a committee presided over by a Manchester manufacturer.

proving highly of the institution of a Chamber of Manufacturers of Great Britain." The committee recommended, he further reported, that the Chamber promote, by means of circular letters and in other ways, the organization of local bodies of manufacturers, whose common interests should find expression in the central body. To distinguish the local chambers from the national organization, it was recommended that the word "general" be prefixed to the title of the Chamber. The committee's recommendations were unanimously adopted. It was decided, also, that the body should be a permanent organization.

At later meetings, the committee presented further details of organization, which the Chamber adopted. The body was to consist of manufacturers only, and the membership fee was fixed at one guinea per year. It was to have a permanent secretary, and standing committees, and upon these the burden of work was to fall. Permanent quarters were arranged for at 38 Fenchurch Street. It was declared repeatedly to be strictly nonpartisan, and its object was set forth as the promotion of manufacturing, which was "independent of party." The members were national representatives of local manufacturing industries, "delegated by their several communities for the purpose of watching over their interests." The manufacturers, by means of the Chamber, were to form "one great chain," pledged to the strengthening of each link. Again, the object was set forth as that of "watching over their interests at large as one aggregate; and of furnishing government, if required, such impartial and true information as they need from time to time, for the protection of the commerce and manufactures of the empire at large." But while the purposes were thus set forth as being comprehensive and permanent, the initial unifying force was hostility to specific governmental policies.[104]

[104] *Gazetteer and New Daily Advertiser,* March 23, April 6, May 2, 1785; *British Merchant for 1787,* pp. 10, 11; Meteyard, *Life of Josiah Wedgwood,* Vol. 2, pp. 540, 541.

As a result of the organized activities of the manufacturers in opposition to the Irish Resolutions and the cotton tax, a flood of more than sixty petitions deluged the House of Commons—petitions usually representing large groups of manufacturers, very similar in content, and commonly denouncing the English system of taxation as well as the proposed readjustment of Irish relations. The government first yielded on the excise issue. On May 10, a bill was passed repealing the more obnoxious features of the law of 1784. The cotton manufacturers continued, nevertheless, in opposition, in company with the other members of the General Chamber, and Pitt again yielded by introducing the Resolutions in a new form, including many modifications demanded by the manufacturers. Immediately thereafter the General Chamber held a general meeting and resolved to notify its constituents and ask them to petition for further delay. Then followed a second deluge of petitions, conforming closely to the recommendations of the General Chamber. Although Pitt secured the adoption of the revised Resolutions, the revision itself was a virtual defeat at home and the cause of the not unexpected rejection of the entire plan in Ireland. Thus ended in defeat, at the hands of the General Chamber of Manufacturers, a policy which had engaged the utmost power of the minister, and which had been regarded by him as vital to himself and to the empire.[105]

A significant result of the struggle over the excise and the Irish Resolutions was the focusing of attention on the problem of liberalizing commercial policy. So far as Anglo-Irish relations alone were concerned, the Irish Resolutions themselves tended to break down the barriers of the old system, but the policy, as was previously stated, was not without serious limita

[105] Commons *Journals*, Vol. 40, pp. 576-1088 (texts of the petitions referred to above); *Gazetteer and New Daily Advertiser*, March 9, 23, April 6, 15, 18, May 14, 1785; *Parliamentary History*, Vol. 25, p. 362.

tions of a monopolistic nature. The newer manufacturers condemned in particular the preferential clause excluding foreign linens as out of keeping with desired reciprocity. This attitude of the manufacturers, while occasioning hostility between them and the government so far as the Irish Resolutions were concerned, was in reality in accord with Pitt's own growing conviction of the need for relaxing restrictions in foreign commerce. In consequence, the conflict, bitter as it was, pointed the way to a reconciliation between the government and the new group, rapidly rising to industrial preeminence.

An occasion for reconciliation was furnished by the revision of commercial relations with France. The treaty of commerce, signed on September 26, 1786, marked a notable advance in the direction of commercial liberalism. It provided for reciprocal liberty of residence, travel, the purchase and use of consumption goods, and the practice of religious faiths, within the European dominions of the two countries, "freely and securely, without license or passport, general or special, by land or by sea." The principal commercial advantages gained by France were in respect to wines and other commodities wherein she excelled by virtue of superior soil, climate and natural resources. The English, on the other hand, benefitted chiefly by means of reductions in tariffs on articles in which England excelled not because of natural advantages but because of superior skill and enterprise, particularly cottons, irons, and pottery.[106]

The relations of the manufacturers to the treaty with France as well as to the Irish and excise policies were directed by the General Chamber of Manufacturers. Pitt publicly sought to belittle the Chamber, but its power aroused in reality his fear and

[106] The texts of the treaty and the supplementary convention are in *Parliamentary History*, Vol. 26, pp. 233-255, 268-272, and in Commons *Journals*, Vol. 42, pp. 266-272, 289, 290. The treaty is also printed as an appendix to the first volume of the *Journal and Correspondence of William, Lord Auckland.*

hostility rather than his contempt. In connection with the formulation of the treaty, he directed Eden, the negotiator, to listen to the members of the Chamber individually, and to conciliate them, but to give the Chamber collectively as little "employment or encouragement as possible." The members of the Chamber, however, preferred to deal with the treaty as a group. Numerous committee meetings were held, the Lords of Trade were interviewed, answers to various questions were secured from Mr. Eden, who negotiated the treaty, and extensive correspondence and interviews were conducted with manufacturers in various parts of the country. The letters received were in general favorable to the treaty, though there is evidence that special weight was given to the sentiments of the cotton, iron and pottery manufacurers, who were enthusiastic in support of the treaty, and who had been from the first the chief factors in the Chamber. On the basis of its investigations, the committee in charge of the Chamber's relations to the treaty met on December 9, 1786, at the Chamber's house on Fenchurch Street and adopted resolutions favoring the treaty. It was resolved that "from the best information the committee can collect from the Chambers of Commerce and Manufactures" in various parts of the country, and from other sources, the treaty, based upon "liberal and equitable principles, promises to be advantageous to their manufacturing and commercial interests by opening a new source of fair trade to both nations," and by "securing a continuance of peace and good offices between two great and neighboring nations, so advantageously situated for availing themselves of the blessings of peace and an extended commerce." [107]

[107] *Parliamentary History*, Vol. 26, pp. 378-382; *Parliamentary Register*, Vol. 21, pp. 162-164; *Journal and Correspondence of William, Lord Auckland*, Vol. 1, p. 91; Langford, *A Century of Birmingham Life*, Vol. 1, pp. 327, 329; *Gazetteer and New Daily Advertiser*, December 12, 14, 1786, January 12, February 7, 12, 13, 17, 19, 21, 1787.

Although the committee claimed that its action was based upon the carefully ascertained views of the constituents of the General Chamber, the resolutions of December 9, when published, gave rise to a controversy which divided the organization into hostile factions. Josiah Wedgwood and the Manchester and Birmingham manufacturers had been responsible for the organization and early activities of the Chamber, and they continued to direct its policies. It was claimed by the opponents of the treaty that the resolutions of December 9 were not representative of the sentiments of the manufacturers generally, and the resolutions were ascribed to the fact that "the Manchester, Birmingham and Staffordshire manufacturers have, of course, great sway in that body." Other manufacturers, it was declared, opposed the treaty, and had trusted the General Chamber to represent their views. But since those favoring the treaty controlled the Chamber, the opposing manufacturers, having been misrepresented till the treaty had been signed, "do not know where to communicate their thoughts, or how to collect the general sense and convey it with force to the minister." [108]

But they resolved not to yield without a struggle. In order to give effect to their views in the approaching vote on the treaty in parliament, they decided to contest the control of the General Chamber by the cotton, iron and pottery men. On February 6 a general meeting of the Chamber was held, and a debate of several hours took place on the propriety of the resolutions of December 9 favoring the treaty. A new committee was appointed to secure further information concerning various aspects of the question. On February 10 another general meeting was held. At this meeting the group favoring the treaty was severely criticized, hostile resolutions were adopted, and the House of Commons was petitioned to delay action in order to allow further consideration.

[108] *Gazetteer and New Daily Advertiser*, January 12, 1787.

The controversy continued for some time, and although those favoring the treaty later at one time regained control, the division in the Chamber served the purpose of the ministers in discrediting the organization; and those who supported the treaty, gaining their ends in the adoption of the treaty, were less eager, apparently, to press the fight in the Chamber than were those who opposed the treaty.[109]

In relation to the question of commercial liberalism, the importance of the division in the General Chamber of Manufacturers over the treaty with France consists in the light it throws on the alinement of the manufacturers. The older groups of manufacturers were wedded to monopoly. The cotton, iron, and pottery manufacturers, who were profiting little by monopoly, and indeed were held in leash by trade restrictions, favored the breakdown of the monopolistic barriers in order that they might the more readily extend their enterprises into new fields.

In view of the undoubted importance of the General Chamber of Manufacturers, there is a remarkable lack of contemporaneous comment. And yet the unmerited obscurity of the organization is not inexplicable. The common attitude of condescension toward manufacturers by literary and political writers in part explains it, but the chief reason, no doubt, is to be found in the methods used by the Chamber. During the progress of the Irish Resolutions and of the bill to repeal the cotton tax through the House of Commons, the Chamber was so desirous of keeping itself behind the scenes that it refused even to petition the House. And yet the initial motive for its organization, it will be recalled, was to influence the government in the consideration of these measures; and it did exert a determining influence. Its method was indirect, through local bodies,

[109] *Gazetteer and New Daily Advertiser*, February 7, 12, 17, 19, 21, March 19, April 6, 1787; *Journal and Correspondence of William, Lord Auckland*, Vol. 1, p. 429; Julia Wedgwood, *The Personal Life of Josiah Wedgwood*, p. 224; *British Merchant for 1787*, pp. 9-12.

and by means of correspondence and consultations. When the Chamber divided in its attitude toward the treaty with France, factionalism led to the publication in the press of accounts of its debates; and one reason assigned by the Birmingham Commercial Committee for opposing the faction hostile to the treaty was the belief that "the publication of the debates in the General Chamber of Manufacturers was exceedingly impolitic." [110]

But while contemporary writers for the most part made no comment, exceptions may be noted. Arthur Young, as might be expected in view of the wide range of his observations and his agrarian sympathies and prejudices, wrote at some length concerning the Chamber, and looked with suspicion on the concerted action of the industrial group, fearing that the Chamber might be made a menace to "the landed interest." The Marquis of Lansdowne said in the House of Lords that he had no doubt that "the Chamber of Manufacturers of Great Britain was very respectable," and he hoped "they would keep themselves to their simple object, and not harbor the idea of setting themselves up as a body to overawe parliament, or to interfere with the political measures of the country." [111]

The fear expressed by Young, Lansdowne and others that the Chamber would lend itself to partisan and class politics proved indeed to be not without foundation. But in maintaining the permanent status and influence of the Chamber, the members encountered a more serious difficulty. This was the diversity of interests represented, and particularly the great and growing divergence between the new capitalistic manufacturers, who were tending toward laissez-faire and commercial liberalism, and

[110] *Gazetteer and New Daily Advertiser*, April 6, 1787.

[111] *Thoughts on the Establishment of a Chamber of Manufacturers*, in *Annals of Agriculture*, Vol. 3, pp. 452-455 (see also pp. 260, 388); *Parliamentary History*, Vol. 25, p. 858.

the older type of manufacturers, who continued to rely upon primitive methods and state support and protection. It was this divergence which was chiefly responsible, as already stated, for the division in the Chamber in 1787 in connection with the treaty of commerce with France.

This vital defect in the plan of organziation of the Chamber serves better than anything else to point out the significance of the organization as an indication of the emergence of the great manufacturers, distinct from the older and more conservative types. And in spite of its defects and its obscurity, the General Chamber of Manufacturers was unquestionably a body of importance. In addition to its significance as an indication of the growing strength and community of interest of the new industrial capitalism, it promoted the local organization of manufacturers and traders along substantially present-day lines; and it may be regarded as a fore-runner, in effect if not in form, of modern associations of manufacturers for maintaining lobbies, committees, and attorneys to promote their interests particularly as affected by politics. In its intolerance of governmental restrictions and in its desire to extend commercial relations into new fields by breaking down the barriers of the old protective system, it was a herald of nineteenth-century liberalism. Its own immediate political influence was a manifestation of the forces which, though checked by wartime reaction, culminated in the nineteenth century in the indirect domination of the state by the industrial oligarchy.

# BIBLIOGRAPHY

*The editions given below are the editions cited in the text.*

## I. NON-CONTEMPORANEOUS ACCOUNTS AND BIBLIOGRAPHIES.


Abram, W. A., *History of Blackburn, Town and Parish.* Blackburn, 1877.

Baines, Edward, Jr., *History of the Cotton Manufacture in Great Britain.* London. [1835].

A comprehensive popular account of the rise of the cotton industry.

Baines, Edward, and Whatton, W. R., *History of the County Palatine and Duchy of Lancaster.* 4 vols. London, 1836.

The biographical portions by Whatton.

Baines, Thomas, and Fairbairn, William, *Lancashire and Cheshire, Past and Present.* 2 vols. London, n. d.

The part dealing with manufactures, commerce, and engineering by Fairbairn.

Bischoff, J., *A Comprehensive History of the Woollen and Worsted Manufactures.* 2 vols. London, 1842.

An uncritical collection of sources connected by the author's comments.

Brooke, R., *Liverpool as It Was During the Last Quarter of the Eighteenth Century.* Liverpool, 1853.

Browning, O., *The Treaty of Commerce between England and France in 1786.* In *Transactions of the Royal Historical Society,* 1885, N. S., Vol. 2, pp. 349-364.

Chapman, S. J., *The Lancashire Cotton Industry.* A Study in Economic Development. Manchester, 1904.

A careful study dealing with labor as well as with capital in the cotton industry, and containing a valuable selected and critical bibliography.

Cunningham, W., *Growth of English Industry and Commerce in Modern Times.* Pt. 2. Cambridge, 1912.

A standard work, with valuable bibliographies.

Davies, J., *A Collection of the Most Important Cases Respecting Patents of Invention.* London, 1816.

Dircks, H., *The Life, Times, and Scientific Labors of the Second Marquis of Worcester.* London, 1865.

An annotated reprint of Worcester's *Century of Inventions* is added, as well as other documents, and bibliographies of early works on mechanical subjects. The work is an interesting but perhaps exaggerated commentary on the crude and meager mechanical knowledge of Worcester's time.

Dowell, S., *A History of Taxation and Taxes in England.* 4 vols. Vol. 4, *Taxes on Articles of Consumption.* London, 1884.

Dumas, F., *Etude sur le traite de commerce de 1786 entre la France et l'Angleterre.* Toulouse, 1904.

Ellison, T., *The Cotton Trade of Great Britain.* London, 1886.

Uncritical.

French, G. J., *Life and Times of Samuel Crompton.* 2d ed. Manchester, 1860.

Guest, R., *Compendious History of the Cotton Manufacture.* Manchester, 1823.

The author attempts to disprove Arkwright's claim to the invention of cotton machinery, and attributes both the spinning jenny and roller spinning to Thomas Highs. A much-quoted and highly controversial work. Contains interesting documents and plates.

Hammond, J. L. and Barbara, *The Town Laborer, 1760-1832.* London, 1917.

An enlightened and attractive study. A bibliography included.

Hands, W., *The Law and Practice of Patents for Invention.* London, 1808.

Helm, E., *Chapters in the History of the Manchester Chamber of Commerce.* London. [1902].

Humphreys, A. L., *A Handbook to County Bibliography, being*

*a Bibliography of Bibliographies Relating to the Counties and Towns of Great Britain and Ireland.* London, 1917.

McCulloch, J. R., *The Literature of Political Economy.* London, 1845.

A "classified catalogue, ..... with historical, critical, and biographical notes." Unless the author's well-known preconceptions in favor of Ricardian economics are kept in mind, the criticisms are misleading, but the work contains valuable information.

MacNeill, J. G. S., *The Constitutional and Parliamentary History of Ireland till the Union.* New York, 1918.

Used in connection with the Irish Resolutions of 1785. Mainly political, and based principally on non-contemporaneous accounts.

Mantoux, Paul, *La Revolution Industrielle au XVIII^e siecle: Essai sur les commencements de la grande industrie moderne en Angleterre.* Paris, 1905.

A comprehensive and valuable study, with extensive bibliography, in part critical.

Meteyard, E., *Life of Josiah Wedgwood.* 2 vols. London, 1865, 1866.

Lacking in critical apparatus and at times in critical insight, but useful particularly because of quotations from manuscripts.

Moulton, H. F., *The Present Law and Practice Relating to Letters Patent for Inventions.* London, 1913.

Owen, Robert, *The Life of Robert Owen Written by Himself.* London, 1857.

Parker, C. S., *Sir Robert Peel, from His Private Papers.* 3 vols. London, 1891, 1899.

Virtually a collection of sources. The first few pages of Vol. 1 deal with the prime minister's father and grandfather, both manufacturers.

Radcliffe, William, *Origin of the New System of Manufacture Commonly Called "Power-Loom Weaving."* Stockport, 1828.

Contains reminiscences of the author's experiences during the period of transition to power spinning in the cotton industry.

Rose, J. H., *William Pitt and National Revival.* London, 1911.

Rose, J. H., *The Franco-British Commercial Treaty.* In *English Historical Review,* 1908, Vol. 23, pp. 709-724.

[Strickland, Mary Cartwright], *A Memoir of the Life, Writings, and Mechanical Inventions of Edmund Cartwright.* London, 1843.

[Troughton, T.], *The History of Liverpool.* Liverpool, 1810.

Wedgwood, Julia, *The Personal Life of Josiah Wedgwood.* London, 1915.

Wheeler, J., *Manchester: Its Political, Social, and Commercial History, Ancient and Modern.* 1836.

Of slight value.

White, G. S., *Memoirs of Samuel Slater.* 2d ed., Phila., 1836.

Wood, H. T., *A History of the Royal Society of Arts.* London, 1913.

## II. CONTEMPORANEOUS SOURCES OF INFORMATION.

### 1. Official Publications.

*Minutes of the Evidence taken before a Committee of the House of Commons* (on Irish Resolutions). 1785.

*Minutes of the Evidence taken before a Committee of the House of Lords* (on Irish Resolutions). 1785.

*The Report of the Commissioners for ..... His Majesty's Customs* (on Irish Resolutions). 1785.

*Report of the Commissioners of Excise to the Committee of the Honorable the House of Commons* (on Irish Resolutions). 1785.

*Report of the Lords of the Committee of Council ..... Relating to Trade and Foreign Plantations upon the two Questions Referred to them by His Majesty's Order in Council of the 14th of January last.* 1785. (On Irish Resolutions).

*Report from the Select Committee on the Laws Relating to the Export of Tools and Machinery.* 1825.

This report, and the two immediately following, while not contemporaneous with the period under investigation, are used to show a continuation of the policy of monopolizing inventions beyond the period in question.

*First Report from the Select Committee Appointed to Inquire into the Operation of the Existing Laws Affecting the Exportation of Machinery.* 1841.

*Second Report from the Select Committee Appointed to Inquire into the Operation of the Existing Laws Affecting the Exportation of Machinery.* 1841.

*Journals of the House of Commons.*

*Journals of the House of Lords.*

*Statutes at Large.*

*Calendar of Home Office Papers of the Reign of George III* (1760-1775). 4 vols.

*Manuscripts of the Duke of Rutland* (Historical MSS. Commission). 3 vols. 1894.

*Subject-matter Index of Patents of Invention from March 2, 1617, to October 1, 1852.* Compiled by Bennett Woodcroft, of the Patent Office. 2 vols. London, 1857.

Used chiefly as an index to Woodcroft's *Titles of Patents of Invention.*

*Titles of Patents of Invention from March 2, 1617 to October 1, 1852.* Compiled by Bennett Woodcroft. 2 vols. London, 1854.

Titles only are given, but the reproduction is exact, and the information is usually complete enough to be definitely descriptive.

## 2. Publications of Societies and Miscellaneous Collections of Sources.

*Transactions of the Society ..... for the Encouragement of Arts, Manufactures and Commerce.* Published annually.

Publication was not begun till 1783, but the early volumes contain extensive information concerning the earlier activities of the Society, compiled from the Society's records.

*The Advancement of Arts, Manufactures and Commerce; or, Descriptions of the Useful Machines and Models Contained in the Repository of the Society for the Encouragement of Arts, Manufactures and Commerce.* Compiled by W. Bailey. London, 1772.

*One Hundred and Six Copper Plates of Mechanical Machines and Implements of Husbandry Approved and Adopted by the Society for the Encouragement of Arts, Manufactures and Commerce.* Compiled by A. M. Bailey. London, 1782.

*Museum Rusticum et Commerciale: or, Select Papers on Agriculture, Commerce, Arts, and Manufactures.* 6 vols. London, 1764-1766.

Under the patronage of members of the Society of Arts.

*Memoirs of Agriculture and other Economical Arts.* Compiled by Robert Dossie, with the support of the Society of Arts. 2 vols. London, 1768.

*Memoirs of the Manchester Literary and Philosophical Society.* London, 1785, etc.

*College of Arts and Sciences Instituted at Manchester, June 6, 1783.* (A circular dated July 9, 1783).

*Letters and Papers of the Society at Bath for the Encouragement of Agriculture, Arts, Manufactures and Commerce.* Bath, 1783, etc.

*Rules and Orders of the Society Instituted at Bath,* etc. Bath, 1783.

*Plan of the Literary and Philosophical Society of Newcastle upon Tyne.* 1793.

*Philosophical Transactions* of the Royal Society of London. The Royal Society adhered in the main to its traditional interest in abstract philosophy and pure science. A notable exception was the publication of Dr. Thomas Percival's *Observations on the State of Population in Manchester and Other Adjacent Places,* in Vol. 64 (1774), pp. 54-66, Vol. 65 (1775), pp. 322-335, and Vol. 66 (1776), pp. 160-167.

*Collectanea Relating to Manchester and Its Neighborhood.* Edited by John Harland. 2 vols. Vols. 68 (1866) and 72 (1867) in *Remains, Historical and Literary, Connected with the Palatine Counties of Lancaster and Chester,* published by the Chetham Society.

Cobbett's *Parliamentary History.* Vols. 15-30, London, 1813-1817.

*The Parliamentary Register.* Volumes 1-30, 1775-1791.

An unofficial but contemporaneous publication of parliamentary debates. Not as authentic as Cobbett's *Parliamentary History,* but containing some matters of value not found in the latter work.

*The Journal and Correspondence of William, Lord Auckland.* Edited by George Hogge. 4 vols. London, 1861.

Vol. 1 contains important papers as well as correspondence relating to the treaty with France, 1786.

*Correspondence between the Right Honble. William Pitt and Charles Duke of Rutland, Lord Lieutenant of Ireland.* 1781-1787. Introductory note by John Duke of Rutland. Edinburgh and London, 1890.

Valuable especially in connection with the Irish Resolutions.

Langford, J. A., *A Century of Birmingham Life.* 2 vols. Birmingham, 1868.

This work consists almost wholly of extracts from local contemporaneous literature. Indifferently organized.

### 3. Periodicals.

*Annals of Agriculture.* London, 1784, etc.

Edited by Arthur Young, who was also the principal contributor.

*Annual Register.* London, 1758, etc.

*European Magazine and London Review.* London, 1782, etc.

*The Gazetteer and New Daily Advertiser.* London.

Chiefly useful for the official announcements, resolutions, etc., of the General Chamber of Manufacturers and other commercial

and industrial bodies. Its news items and comments are also valuable if proper account is taken of their political bias.

*Gentleman's Magazine.* London.

*New Annual Register.* London, 1780, etc.

Of slight value; political and literary almost exclusively.

## 4. Works of Reference, History, Travel, and Description.

Aikin, J., *A Description of the Country from Thirty to Forty Miles Round Manchester.* London, 1795.

Compiled and edited by a physician and writer of note. Published in 1795, but described by the publishers as a "laborious undertaking," requiring long labor. Radford's *Directory of Manchester,* published in 1788, omitted a description of manufactures on the ground that this would have "anticipated in some degree another work [which has] long been preparing for the public eye, viz., A Description of Manchester and the country twenty miles round,"—an obvious reference to Aikin's work. (John Harland, *Collectanea Relating to Manchester,* p. 138). A work of great value.

Anderson, A., *An Historical and Chronological Deduction of the Origin of Commerce.* 4 vols., revised ed., London, 1787, 1789.

Baldwin, T., *Airopaidia.* Chester, 1786.

Described by the author as "an introduction to aerial navigation."

*Companion to the Leasowes, Hagley, and Enville, ..... to Which Is Prefixed the Present State of Birmingham.* London, 1789.

*Encyclopedia Britannica.* 1st, 2d, and 3d eds.

The third edition was published later than the period covered by this study. Internal evidence shows, however, that the articles used in the present study were written not later than 1792. In the article on Manchester, reference is made to "the marriages in Manchester and Salford from January 1791 to January 1792." Hence the article was not written earlier than 1792. In the same article is a further statement to the effect that a certain work "will be published in the early spring of 1793." This article was therefore compiled in 1792. The article on cotton states that the quantity of raw cotton consumed six years

earlier was 11,000,000 pounds. Approximately 11,000,000 pounds were consumed, according to a table given in the same article, both in 1782 and in 1784. The date of compilation of this article was therefore either 1788 or 1790.

Harte, W., *Essays on Husbandry.* 2d ed., London, 1770.

[Ogden, James], *A Description of Manchester.* By a Native of the Town. Manchester, 1783. (Reprinted under the title, *Manchester a Hundred Years Ago,* edited by W. E. A. Axon. Manchester, 1887. The edition used is the reprint).

Peacock, J., *Proposals for a Magnificent and Interesting Establishment.* London, 1790.

Affords singular evidence of the industrial and mechanical interests of the time.

Ruggles, T., *The History of the Poor; their Rights, Duties, and the Laws Respecting Them.* 2 vols. London, 1793, 1794.

A work which had appeared serially in Young's *Annals of Agriculture.* Written from the not too enlightened point of view of a country gentleman, but apparently an attempt to give an unbiased account.

Stone, T., *An Essay on Agriculture.* Lynn, 1785.

Opposed to labor-saving machines.

Walpole, G. A., *New British Traveller.* London, 1784.

Wendeborn, F. A., *A View of England towards the Close of the Eighteenth Century.* 2 vols. London, 1791.

Translated by the author from the original German edition. The author states in his preface that "he wrote merely for the instruction of his own countrymen," that is, Germans; that "it was much read on the continent and has been translated into other languages." He states further that he came to England at the age of twenty-five and ministered twenty-two years to a German congregation in London. Critical of English life.

Young, A., *A Six Months' Tour Through the North of England.* 4 vols., 2d ed., London, 1771.

[Young, A.], *A Six Weeks' Tour Through the Southern Counties of England and Wales.* Dublin, 1768.

Young, A., *Tour in Ireland.* Edited by A. W. Hutton, with bibliography of Young's works. 2 vols. London, 1892.

Young, A., *Travels during the Years 1787, 1788 and 1789 Un-*

*dertaken more Particularly with a View of Ascertaining the Cultivation, Wealth, Resources, and National Prosperity of the Kingdom of France.* 2d ed., London, 1794.

Useful particularly in connection with the commercial treaty with France, and with French interests in English inventions.

## 5. Books and Pamphlets of a Controversial and Critical Nature.

Anstie, J., *Observations on the Importance and Necessity of Introducing Improved Machinery into the Woollen Manufactory, ..... [especially] of the Counties of Wilts, Gloucester and Somerset.* London, 1803.

By a woollen manufacturer. Written later than the period studied, but affording all the more valid evidence of the lateness and the sectional nature of the transition to improved methods in the woollen industry.

*An Answer to the Complete Investigation of Mr. Eden's Treaty.* London, 1787.

Favorable to the treaty.

Bentham, Jeremy, *Defense of Usury, ..... to Which Is Added a Letter to Adam Smith, Esq., L. L. D., on the Discouragement of Inventive Industry.* Philadelphia, 1796.

Written in 1787. A vindication of "inventive industry."

*The British Merchant for 1787.* Addressed to the Chamber of Manufacturers. London, 1787.

Hostile to the treaty with France, and to the General Chamber of Manufacturers because of its support of the treaty.

Chalmers, George, *An Estimate of the Comparative Strength of Great Britain during the Present and Four Preceding Reigns.* London.

This work went through a number of editions, the editions used being those of 1786 and 1794. The author states (ed. 1794, p. ii) that "the former editions ..... were translated into the languages of the Continent." Controversial, but based on an extensive study of facts.

*A Complete Investigation of Mr. Eden's Treaty.* London, 1787.

Opposed to the treaty.

*The Contrast; or, a Comparison between our Woollen, Linen, Cotton and Silk Manufactures.* London, 1782.

Eden, W., *Four Letters to the Earl of Carlisle .....The Third Edition, to Which Is Added a Fifth Letter on Population.* London, 1780.

[Eden, W.], *A Short Vindication of the French Treaty from the Charges Brought against It in a late Pamphlet, Entitled, A View of the Treaty of Commerce with France.* London, 1787.

Of special interest because written by the negotiator of the treaty.

Gisborne, T., *An Enquiry into the Duties of Men in the Higher and Middle Classes of Society in Great Britain.* Ch. 13, *On the Duties of Persons engaged in Trade and Business.* London, 1794.

A popular work on morals, taking into account changing industrial conditions.

*Historical and Political Remarks upon the Tariff of the Commercial Treaty.* London, 1787.

An anonymous but careful analysis of the treaty, with extensive notes on preceding treaties and on industrial conditions.

Howlett, J., *An Examination of Dr. Price's Essay on the Population of England and Wales.* Maidstone. [1781 (?)].

Howlett, in opposition to Dr. Price, was one of the principal champions of the view that population was increasing, particularly in the industrial regions. A valuable work. The author also contributed useful articles to the *Annals of Agriculture* and the *Gentleman's Magazine.*

*The Increase of Manufactures, Commerce and Finance.* London, 1785.

Kenrick, W., *An Address to the Artists and Manufacturers of Great Britain Respecting an Application to Parliament for the farther Encouragement of New Discoveries and Inventions in the Useful Arts.* London, 1774.

Valuable.