

INDUSTRIAL PRICE POLICIES AND ECONOMIC PROGRESS

BY

EDWIN G. NOURSE AND HORACE B. DRURY

**Can business men reduce prices
and maintain profits?**

**What factors complicate the
price-maker's decision?**

**Where are large corporations
helpful?**

**What does free business enter-
prise involve?**

76

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1938

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DIRECTOR'S PREFACE

As explained at some length in the introductory chapter, this book proceeds from the general analysis developed in a former Brookings Institution publication, *Income and Economic Progress*, by a process of "getting down to cases." On the basis of a comprehensive view of the actual complexities amidst which the business man works, it seeks to discern the constructive implications of what is already being done by pace-makers in this field and to envision the results to be expected if these constructive lines of business practice were widely followed.

This approach looks toward inductive development of a positive theory of the pricing process in the real and dynamic world evolving about us. The authors believe that this will have more practical usefulness than destructive criticism of current price mechanisms on the ground that they depart widely from the principles of competitive price which were developed out of the conditions of older and simpler economies.

The fact that the authors are receptive to these newer developments of our price economy by no means implies that they are blind to the great imperfections by which it is still beset, nor complacent about the continuance of these defects. Their treatment of the problem does, however, imply a certain strategy for the attack on social problems. It puts major emphasis on discovering and pushing forward those dynamic elements out of which progress may be made, with secondary emphasis on the eradication of retarding or destructive features, many of which are normally left behind in the process of vigorous growth. It is believed that such a course leads to more rapid progress than would come from concentration on

the elimination of specific abuses from a system conceived as essentially static.

At the present time, no doubt, most readers tend to think of any price discussion as focused on the immediate problem of depression and recovery. This study, however, like the former series on the distribution of income in relation to economic progress, is not directly concerned with the present depression or with depression causes or cures. Whatever its immediate applications, its analysis of price policies is concerned with economic hygiene rather than emergency treatment of acute illness.

The committee of the Institute which cooperated with the authors in the preparation of this volume consisted of Harold G. Moulton and Harold B. Rowe. Acknowledgment is here made to Spurgeon Bell in connection with Chapter II and to Leverett S. Lyon in connection with the NRA section in Chapter X and "Legal and Administrative Influences" in Chapter VII. The authors also express their appreciation of the information furnished and counsel given by numerous business men and government officials. Special mention is made of Professor Gorton James who, before his untimely death, served on our staff during the early stages of work on this project.

The study upon which this report is based was made possible by funds granted by The Maurice and Laura Falk Foundation of Pittsburgh. However, the Falk Foundation is not the author, publisher, or proprietor of this publication and is not to be understood as approving or disapproving by virtue of its grant any of the statements and views expressed herein.

EDWIN G. NOURSE
Director

Institute of Economics
June 1938

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**INDUSTRIAL PRICE POLICIES
AND ECONOMIC PROGRESS**

INTRODUCTION

In the four-volume exploratory survey of the distribution of wealth and income in relation to economic progress published by the Brookings Institution,¹ no attempt was made to draw up a plan for some new kind of economic world. The contribution made by that series consisted rather in an appraisal, both factual and theoretical, of the economic system under which business has been accustomed to operate in the United States. In this appraisal the chief concern was to distinguish from those forces which have made for the system's success certain other forces which have caused undue friction in its functioning or even, as to parts of the system or during intervals of time, produced serious collapse or partial wreckage. It was hoped thereby to promote clearer understanding as to which practices in the pecuniary organization of industry—that is, those which concern prices and the distribution of income—are truly constructive. Such knowledge should help in directing future effort into those channels which offer the greatest promise of success in bringing about further economic progress.

Throughout this earlier study, it was recognized, of course, that no single program or proposal could be adequate to turn our frequently disturbed economic world into one which would be always orderly and progressive. The concluding volume, *Income and Economic Progress*, did, however, attempt to classify in a few broad divisions the outstanding proposals for change which have been advanced by various interests and

¹ Edwin G. Nourse and Associates, *America's Capacity to Produce*; Maurice Leven, Harold G. Moulton, and Clark Warburton, *America's Capacity to Consume*; Harold G. Moulton, *The Formation of Capital*; Harold G. Moulton, *Income and Economic Progress*.

some of which we may expect to see prosecuted in our country's quest for prosperity and progress. It was there sought to apply the analysis developed in the preceding volumes of the series to some sort of appraisal of the comparative difficulty or relative promise of putting these several schemes of economic betterment into effect. This led to the conclusion that, whatever the gains to be derived from improvement of the foreign market, restriction of the individual's acquisition of private wealth, reforms in the tax system, revamping of wage arrangements, or the development of profit-sharing,

. . . there is one type of distributive reform which in our judgment outranks all others in its promise of attaining the goal we seek. This is in the gradual but persistent revamping of price policy so as to pass on the benefits of technological progress and rising productivity to all the population in their rôle of consumers. Such a procedure seems to us to assure the maximum gain to the masses both in the short run and in the long run. At the same time it does not destroy the profit motive nor jeopardize the winning of such profits as are necessary to maintain our capital fund and make possible the financing of improvements in plant and equipment on a basis even more liberal than that now obtaining.²

This conclusion, that the broadest and most direct road to the improvement of the general economic welfare is to be found through a consistent policy of expanding real incomes by lowering the prices of goods and services wherever advance in techniques and organization make such a course practicable, has attracted wide popular attention. In particular, it challenged the attention of that group who as business executives are themselves directly responsible for the day-to-day decisions on commercial procedure which in retrospect take on the

² Moulton, *Income and Economic Progress*, pp. 161-62.

character of price policy, which in turn constitutes one of the major factors in our economic statesmanship.

Implicit in this appeal to "economic statesmanship" and price *policy* of course is the recognition that in very large areas of business as now organized, management does have a measure of jurisdiction over prices. That is, executives have the power to modify price schedules within limits sometimes narrow, sometimes rather wide. *Income and Economic Progress* was not concerned with examining the question whether the legal or other institutions which permit or foster such administrative control over prices are themselves beneficial or harmful features of the existing economic system. Nor are we directly concerned with that problem in the present volume, although the nature of the issue will be indicated further in the closing chapter. Instead we are seeking to portray the conditions actually obtaining in the price world in which the business manager must make his decisions and to consider with him the circumstances under which and the extent to which he can contribute to national welfare by naming a lower rather than a higher price for his products.

To the proposals for a low-price approach rather than a price-maintenance approach to the problem of stabilized prosperity and economic progress, business men have offered several types of reaction. One is affirmative. "Yes," some executives say, "such is the pathway along which American industry has been making its splendid strides of progress, and we propose to continue similar policies in the future." But there has also been a directly opposite reaction on the part of another group of executives, who say: "Such talk is academic and impractical. We are not in business for our health. If we don't set

prices as high as the traffic will bear and thus insure ample profit margins, enterprise will slow down, the capital supply will dry up and, instead of economic progress, we shall have stagnation or decline." Still another group falls between these two extremes, saying: "We believe fully in gradual price reduction as a principle of general economic progress. But there are special reasons why it cannot be applied in our business."

Of these several views each contains a measure of truth; yet none of them, we venture to suggest, is fully tenable as applied to American business as a whole. It is patent that price-making policy and action cannot disregard considerations of cost and realized profits. But it is necessary to consider not only present costs but also possibilities of cost reduction and the future growth and long-run prosperity of the business itself, to say nothing of its effect on the larger social interest. Business executives therefore cannot afford to wall themselves off from outside inquiries or from self-examination designed to reveal the character and extent of price adjustments which will best promote the health and growth of business as a whole and over an extended period.

We cannot dismiss the matter of price policy with the complacent words of those who view, with proper pride, the unquestionable progress already made and which is still going on in considerable measure. There are, no doubt, individual executives, particular concerns, or even whole branches of industry whose record would show that they have come measurably close to doing all that could be expected of them in the past and that they are still applying their best energies and greatest ingenuity toward carrying on the process of progressive price reduction or enhancement of values to the consumer. Even those who entertain the best intentions, however, find their business outlook and actions conditioned by the

general institutions and practices of the market place in which they live.

It was pointed out in *Income and Economic Progress* that the universally and effectively operating force of business competition envisaged in classical economic theory as the automatic regulator of the system of private capitalism and a guarantee of maximum progress under it, have become seriously impaired. To quote:

. . . The method of continuously expanding markets through a persistent reduction of prices as efficiency increases has in considerable measure ceased to operate. Price stabilization policies have in many lines come to stand in the way of a dissemination of the benefits of progress, and have therefore tended to nullify the results of technological advance . . .

A number of factors and forces have combined to produce what may be called the price stabilization movement . . . unified monopoly or industrial combination, by means of which the prices of particular commodities are controlled by a single management . . . the cartel, or "collective monopoly," under which there is group control of production with a view to stabilizing prices in a given industry . . . the trade association, which seeks, usually through informal cooperation, to stabilize certain conditions within particular industries without interfering with the control of production. . . . Unified monopolies, private and public, exist in all countries; the cartel is found chiefly in Europe, and the trade association is essentially an American development which has flowered in the post-war period. . . .

[Finally, as for] the method which has been . . . officially experimented with under the auspices of the National Recovery Administration . . . in the majority of instances price increases ran ahead of wage increases . . . [and in the case of the AAA] we have . . . under governmental leadership, the restriction of agricultural output with a view to restoring the purchasing power of agriculture in terms of industrial products. . . .

The evolution of industrial policy in recent times has thus served in substantial measure to prevent or impede the functioning of the competitive price mechanism. That is to say, over an ever-widening segment of the economic system the process of persistently expanding purchasing power by means

of price reductions has been checked. Thus, one of the primary agencies of adjustment upon which the capitalistic system was supposed to rely has in substantial degree ceased to be operative.³

Numerous statements have been made in speeches, articles, and books calling attention to the manner in which these several institutions or practices operate toward the maintenance or advance of prices rather than permitting or facilitating their reduction.⁴ Many of these discussions fail to present the nature of the price-making process in the great variety of situations by which business men are actually confronted. In our consideration of the possibilities of promoting general welfare through price reduction wherever such a course is feasible, we shall examine concretely a wide range of practical considerations which influence the business behavior of executives in the actual pricing of their goods. This procedure, we believe, helps to differentiate those situations in which little or no price reduction is possible from others in which larger dollar values for the consumer are feasible if proper methods are followed. It thus suggests a scheme of rough appraisal by which to judge whether executives, even those who point with pride to their price record, have been doing all that could reasonably be asked. Finally, it sheds light on the question of how the methods of the pace-makers in price reduction might be more widely disseminated among those of less

³ Moulton, *Income and Economic Progress*, pp. 134-35, 102, 105, 125, 138.

⁴ One of the most extensive and most recent of these is Arthur R. Burns, *The Decline of Competition*. It opens with the statement: "The rise of the 'heavy industries,' changes in methods of selling, and the widening use of corporate forms of business organization are bringing, if they have not already brought, the era of competitive capitalism to a close. These changes have swept across the industrial scene in America with remarkable speed since the closing years of the nineteenth century." (Preface, p. v.) This is a more sweeping generalization than we are prepared to accept, as will appear at later stages of our discussion.

courage, zeal, or ingenuity, thereby promoting better price adjustments as a constructive element in the economic process.

This line of approach also meets upon their own ground those who say that the doctrine of progressive price reduction is unsound—that it would promote disaster rather than progress. There was no intention, in *Income and Economic Progress*, of suggesting that any particular rate or schedule of reductions could be initiated or maintained for any given industry or made uniform for all industries. It was not even said that any reduction at all is possible in a particular instance, but simply that where efficiency gains *are being made* or can be introduced it is in the interest of economic health and growth that the results of these gains be shared with the consumer. If any industry is so circumstanced that no further technical progress is attainable, obviously there will be nothing to pass on.

But for any group of business executives to generalize that situation into the assertion that price reduction is not a business policy broadly applicable to many lines of American industry in the present state of scientific progress, invention, and the improvement of schemes of business organization and operation, seems to us a counsel of despair wholly unsupported by the facts. The record of the past two hundred years has shown a brisk and accelerating tempo of advance in productivity. With the momentum already attained by this advance, it would seem reasonable to expect things at least as good and probably much better, in the years ahead, rather than to say that from now on we should seek to develop protective devices designed merely to conserve the gains already made.

A word of caution needs to be included here with reference to the relation of our price analysis to the ques-

tion of wages. This book is not about wages, and we shall make no assumption as to the adequacy of wage returns either in general or in specific cases; neither shall we adduce evidence or develop analysis covering that issue. We do wish to make it clear, however, that we are not talking about price reductions which might be secured at the expense of labor or by driving down the purchase price of raw materials in ways that would contract the income of farmers or other extractive workers. There are important issues to be considered with respect to both wages and the pricing of raw materials, *but we are not dealing with those problems in this book.*⁵

What we *are* talking about is increased productivity growing out of new technical processes, better equipment, or improved organization. Such increases in efficiency may be accomplished through the use of more capital per unit—occasionally of less capital—and generally with the use of less labor. Their fruits must go to the capitalist, to the laborer, or to the consumer—one or all. Historically we see such gains distributed among the three, in ratios determined by chance or by struggle rather than by anything approaching scientific understanding of the results on the future efficiency of the economy which would be thereby brought about. Other writers have dealt or will deal with the question of capital's share or of labor's share in the benefits accruing from increased productivity. Here we are limiting ourselves to a study of the process by which dissemination to all parts of the population may be effected through price adjustment and the repercussions that this distributive process has on production itself.

A word of explanation is needed also as to the relation of our discussion to the general matter of price rigidity,

⁵ However, the logical similarity of the question of the price of labor to the prices of commodities is touched on briefly on p. 272.

price flexibility, and administered prices which is attracting so much attention, not to say controversy, today. Nothing is said in this book about flexibility of prices in the sense of frequency of price change, which we regard as a fictitious and misleading test of the soundness of price adjustments.⁶ We are concerned entirely with the relation that the average level and the trend of prices of a commodity over a period of months or years bears to conditions of productive efficiency on the one side and to the growth of the consumer market on the other. We are not concerned here with possible remedies for depression.

All the prices that we are considering are "administered" prices. That is, they are prices established by the decision of executives who have power to decide in advance the price at which goods shall be sold and to back up that decision by expanding or contracting operations in volume large enough to have a significant effect on the market. In the absence of such power to influence the market, there could be no question of price *policy* to discuss. But "administered price" is not a term of reproach. It is merely a convenient way of describing the facts of economic life as lived in the modern industrial world. The pertinent question is whether this power of the executive to guide the course of prices is exercised with such intelligence as to promote economic progress to the full. Or does it cause civilization's march toward greater material well-being to lag and falter? That is the ultimate question toward which this book seeks to direct the thought of the business man and the student.

Two years ago appeal was made to the friendly interest of business men in the prosecution of further

⁶ See also Don D. Humphrey, "The Nature and Meaning of Rigid Prices, 1890-1933," *Journal of Political Economy*, October 1937, Vol. XLV, No. 5, p. 651; and Rufus Tucker, "Reasons for Price Rigidity," *American Economic Review*, March 1938, Vol. XXVIII, No. 1, p. 41.

studies of the problem of price policy.¹ It was our desire to keep our feet firmly on the ground; to make realistic analyses of price problems as they actually confront the business man, emphasizing the technological conditions which underlie economic processes and the institutional framework within which business is conducted. Toward the realization of such an end, both the broad experience of the active practitioner of business and the scientific techniques of the professional student of business need to be blended. We have been gratified during the preparation of this volume at the generous cooperation which has been extended to its authors by executive officials and by staff specialists of many business concerns. To all these we express our deep sense of appreciation.

The presentation of the results thus far developed falls into three parts. In Chapters I and II we draw together certain general statistical material for the purpose of giving a bird's-eye view of the matters under discussion. The second group of chapters, III to VII inclusive, turns from the generalities of statistical tabulations and graphic indexes to analysis of particular concrete aspects of recent industrial price-making. They describe and analyze various ways in which reduction in real price has been effected in many parts of the industrial field in recent decades, and factors both within and outside the given company which condition and complicate the price-maker's decisions. The third part of the book, Chapters VIII to XI, emphasizes the organizational factor and the various ways in which the specialized executive function may be exercised through price policy to determine the course of modern industry.

¹ Moulton, *Income and Economic Progress*, p. 164.

CHAPTER I

THE LONG-TIME MOVEMENT OF PRICES

As a means of setting our problem in its general perspective, let us turn to the historic record of prices since the Civil War. The period from 1870 forward covers the great epoch of America's industrial development with its immense sweep of scientific discovery, invention, and technological advance. If our economic system has been working according to the pattern of competitive free enterprise set forth in orthodox economic theory, we should expect to see such advances reflected in the decline in the prices (relative to money incomes) of a large variety of commodities, thereby enabling consumers to expand their consumption to the amount made possible by the gains in productivity. But these years cover also a period of rapid development of the corporate form of business, trust building and trust "busting," and other distinctive features of our modern economic organization. Did such institutional developments tend to promote the enlargement of general purchasing power at a rate commensurate with our technological progress, or did they perchance retard it?

To answer this question fully would require comparative study of statistical records of price and income much more adequate than are in fact available. Since the ultimate problem with which we are concerned relates to the purchasing power of consumers, we should need, even to describe what has actually taken place, a complete record of individual prices at retail and at all the antecedent stages back to the first seller of raw materials (each commodity price being properly identified as to quality). Unfortunately, statistics of retail prices are

notoriously fragmentary and unreliable except in a few lines and for recent years. Better data are available for wholesale prices, but even those which are most generally accepted fall far short of what might be desired.¹ Furthermore, while it is necessary to combine these data into a price index in order to make them manageable at all, the very process of reducing them to an index somewhat obscures their precise significance.

A wholesale price index is, however, from one point of view more suitable to our present use than a retail index even if the latter were available. To use it is to avoid the complication of dealing with a retail price which is a composite not only of manufacturers' prices but also of transportation, storage, and other marketing charges, and the margins of wholesalers, jobbers, and retailers. Questions relating to the charges of these marketing agencies (as well as utility rates, charges for professional services, and the like) while important for the complete analysis of the problem of price policies, must in the main be omitted from the present study. We shall also exclude as far as possible prices of agricultural commodities and other raw materials while we concentrate attention primarily on the great area of industrial prices and the price problems of the manufacturer.

In attempting to judge the significance of the movements of prices as affecting the purchasing power of the public, a further difficulty is encountered. Since money income also fluctuates, prices must be interpreted in the light of the income position of buyers from year to year.

¹Two outstanding difficulties are (1) that the prices actually paid may not be accurately reported and (2) that prices in successive periods frequently do not cover the same type and quality of goods. The two problems are more or less interrelated. A brief discussion concerned primarily with the former is presented in App. A, and a somewhat detailed discussion relating primarily to the latter appears in Chap. III.

Per capita income figures for our population as a whole covering the period to be examined are lacking. We fall back, therefore, on an index of weekly earnings of wage earners in manufacturing industries. Such an index of workers' income has the serious defect of not reflecting the total amount of employment within the year, and furthermore it does not reflect the presumably somewhat different ups and downs of farm incomes and thus the significance of price changes to rural buyers. It omits also the incomes of the "white collar" classes and other important groups.

With these limitations in mind, we shall present our index of wholesale prices of manufactured products in comparison with that for weekly wages as a convenient means of setting forth the general elements of our problem and the issues into which we propose to probe more deeply in succeeding chapters.

TRENDS OF WHOLESALE PRICES AND PURCHASING POWER

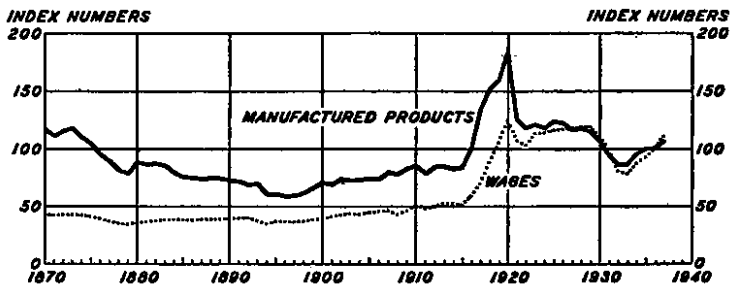
The solid line in the upper part of the chart on page 14 represents a wholesale price index covering manufactured articles.³ This index dropped from 106 in 1870 to 54 in 1896, rose between 1896 and 1920 from 54 to 183, and between 1920 and 1936 fell from 183 to 100. But does this mean that in 1896 the purchasing power over these goods enjoyed by consumers (assuming that retail price kept in step with wholesale) was practically twice as great as it was in 1870; that in 1920 it was only be-

³ From 1870 through 1889, the index is based on a simple average of 125 manufactured articles from the price series presented in the "Aldrich Report"; from 1890 to 1912, it is based on the 70 "manufactured commodities" reported by the U. S. Bureau of Labor Statistics; from 1913 to 1937 on the index of 582 "finished products" currently reported by the Bureau of Labor Statistics. The three series have been adjusted to bring them together on a common base (1936). See table 1, App. B.

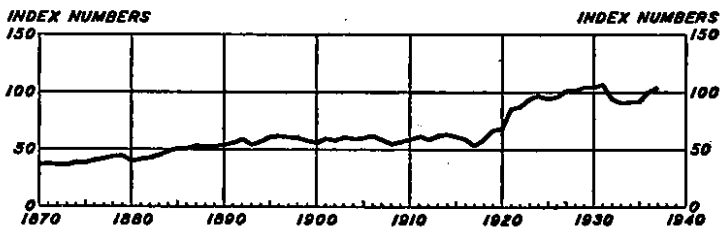
tween one-third and one-fourth as much as in 1896; and that by 1936 consumers could again buy about as much as in 1870 (nearly twice as much as in 1920, but not much more than half as much as in 1896)?

INDEXES OF WEEKLY WAGES AND OF WHOLESALE PRICES OF
MANUFACTURED PRODUCTS, 1870-1937^a

(1936 = 100)



Quantity Purchasable (at Wholesale Prices) with a Week's Wage



^a For data and sources, see table 1, App. B.

Since, as already mentioned, the significance of a price series as a measure of purchasing power can be judged only in comparison with the incomes of buyers, we present on the chart also a graph of wage earners' weekly earnings. By dividing the price index by the weekly earnings index, we derive a third set of figures showing the changes in the amount of goods which could (at wholesale prices) be purchased by the weekly earnings of the wage earner in each of the several years.

This index, presented in the lower section of the chart, indicates that between 1870 and 1936 the quantity of goods which could be purchased by the amount of money which a wage earner would receive in a week was multiplied more than two and a half times—notwithstanding the fact that hours were meanwhile cut to about two-thirds of their former number. Since we are dealing here with wholesale rather than retail prices and with capital as well as consumers' goods, this procedure does not tell us just what improvement in standard of living was made possible for manufacturing workers, and with even less accuracy does it describe the amount of progress made by other groups in the community, such as farmers and business men. When all qualifications are made, however, two impressions which are conveyed by this chart appear to be essentially sound.

The first impression is that the rate of gain in the purchasing power of wage earners varied considerably in different periods. After making notable headway from 1870 to the early 90's, the movement practically came to a standstill in the quarter-century which preceded our entry into the World War. Thereafter (from 1917 to the depression), there was another phenomenal uptrend in purchasing power. As compared with the pronounced gains shown during the period preceding the depression of the 90's and that from the World War to 1930, the retardation which marked the period from the depression of the 90's to the World War is outstanding.³

³ Of course our index of earnings is deficient in that it shows merely earnings of those employed and does not take into account differences in the amount of employment secured in the different years. It seems probable that if the rather steady high level of industrial activity which obtained from the turn of the century to the opening of the World War were taken account of, this period would make a relatively better showing as compared with the 70's and 90's which were stricken by prolonged periods of industrial inactivity. However, the alogan of the "full

The second fact shown graphically by the chart is that over this period of two-thirds of a century, the quantity of goods which the wage-earning class could buy was greatly enlarged. Such a result came about sometimes through reduction in prices while wages were relatively maintained or increased and sometimes through increase in wages while prices were not correspondingly raised. This presents a more optimistic picture than that seen by the many persons who feel that our industrial system has not shown itself able to adjust its distribution of income to its increasing capacities of production.

But while the evidence in the chart indicates that substantial progress was made during this period toward bettering the purchasing power of wage workers, it does not indicate that the rise was as great as it might have been. Further study is needed to determine whether practices followed in the pricing of manufactured products have been such as to promote the maximum progress throughout the period or whether they have at times constituted retarding influences.

For example, what significance is to be attached to the flattening out in the increase in purchasing power of wage earners from the late 90's to the World War? It may have been attributable in part to a slackening in the rate of technological progress. During the quarter-century before the depression of the 90's, the internal development of the United States had proceeded at a revolutionary pace. Improved transportation, the replacement of handicraft production by factories, the introduction of the basic techniques for big industries

dinner pail" which characterized the early years of this period gave place to the less cheerful slogan of the "high cost of living" in its later years. This expressed the popular feeling that even with employment well maintained, earnings were failing to keep step with the advancing trend of prices.

caused changes of a magnitude which could not easily be equaled in the decades which followed. Perhaps this period was technologically one of incubation. Possibly, too, the pause in the upward trend of per capita purchasing power of the wage-earning masses may also have been due in part to the millions of immigrants who swelled the ranks of factory labor. The unskilled character of the majority of this labor and the great abundance of its supply tended to exert a depressing effect on wage rates and to increase the proportion of labor in the lower-paid non-union groups. At the same time the effect of increasing population tended to stiffen commodity prices.

On the other hand, it is possible that some check to technological progress during the late nineteenth and twentieth centuries may have been due to the change in the character of industrial management. This was an active period of industrial consolidation and the formation of "trusts" of a much more permanent and sweeping character than had been known previously. This type of organization was unfamiliar and in its early use tended to follow price policies which did not adequately reflect the technological improvement which accompanied the organizational changes. Though there were of course some clear instances of consolidations which stimulated the introduction of improved methods, many others were directed primarily toward making promotional profits.

For the decade of the 1920's the chart shows a rapid rise in wages as compared with prices. Does this warrant the inference that in spite of retarding influences due to the recrudescence of the consolidation movement, competitive forces were then sufficiently strong to cause the passing on to consumers of a considerable amount of the

very great technological progress which was being experienced? Certainly the war had had a pronounced stimulating effect on many phases of industrial technique. And the post-war period saw a new wave of progress—based for the most part on a revamping of methods and equipment in the light of a more scientific analysis of facts making for efficiency.⁴ There was a somewhat prevalent complaint of business men that this was a period of “profitless prosperity,” but the data (see Chapter II) show that in fact profits were well maintained. Since our chart indicates that considerable gains in purchasing power were going to wage earners, it suggests that some force was causing producers to share the benefits of greater productivity with consumers in ways that seemed to them very liberal.

The answers to questions such as we have been raising may not be found through the mere examination of the course of prices shown on charts but will constitute the major quest in later chapters. Meanwhile, we need to elaborate a bit further the price picture shown by the statistics.

In using an index of wholesale prices from which farm products and minerals have been excluded, we did not entirely escape the difficulty of dealing with prices which are themselves a composite of several elements, some of which lie outside the field of our present analysis. That is to say, the price of a finished product is in many instances made up largely of cost of raw materials and only in small part of the manufacturer's return for

⁴ This conclusion as to the relative rates of technological progress in different periods is based in part on the conviction of many who have been intimately acquainted with particular industries, but is also borne out by general statistics of volume of output relative to number of employees which, having their beginning in about 1900, have become increasingly comprehensive and trustworthy for the later years.

fabrication. Such a price might show a distinct downward tendency and yet not reflect the passing on to the purchaser even of the full decline in raw material cost which the manufacturer was enjoying. This might completely obscure what was happening as to the passing on of added efficiency or declining costs being realized in the fabricating process itself. On the other hand, the mere fact that the prices at which a manufacturer was selling his product had risen would not necessarily mean that he was not sharing his reduced costs of operation very liberally with the consumer if, during the time that these costs were falling, he was experiencing an increase in raw material costs or was granting substantial advances in wages not offset by increased labor efficiency.

Extensive case studies of many separate commodities would be needed to answer these questions. Several of the constituent issues are probed further in later chapters of this book. But some segregation of the raw material situation and some clarification of the industrialist's position in the price-making process may be effected by consideration of available group indexes.

GROUP AND INDIVIDUAL INDEXES

For the period since 1890 the United States Bureau of Labor Statistics has computed separate group indexes for manufactured products and raw materials. These indexes have been drawn up in one way for the period from 1890 to 1913 and on a radically different basis since that date.⁵ It seems wiser, therefore, to present

⁵ The raw materials represented on the first chart do not correspond exactly with the raw materials on the second chart, nor is the definition of manufactured goods consistent for the two periods. In the period prior to 1913 the concept of what constitutes raw material and what constitutes a product was approached from the viewpoint of each separate industry or plant. Thus linseed oil was a "manufactured product" of

them as two separate graphs rather than to effect a mechanical joining of them.

By showing the somewhat divergent movements of these two groups of prices, however, these indexes serve to illustrate how far wholesale prices may fail to give a true picture of the situation with respect to returns for fabrication when such prices embrace a large element of non-industrial prices as embodied in the costs of the raw materials used by the manufacturer. Such raw material costs account for more than half the selling price of manufactured products in general. And of course the influence of material costs on the price has been especially marked in the case of those industries which utilize agricultural raw materials. The same point, however, may be made with reference to the prices of goods manufactured from mineral or forest products. A notable case is that of automobile tires. Since the price of crude rubber has followed a sharply downward course, we would need to give proper weight to this, as well as the cost of the sulphur, carbon, and cotton textile used in tire manufacture, before attempting to appraise the trend in prices of finished tires.

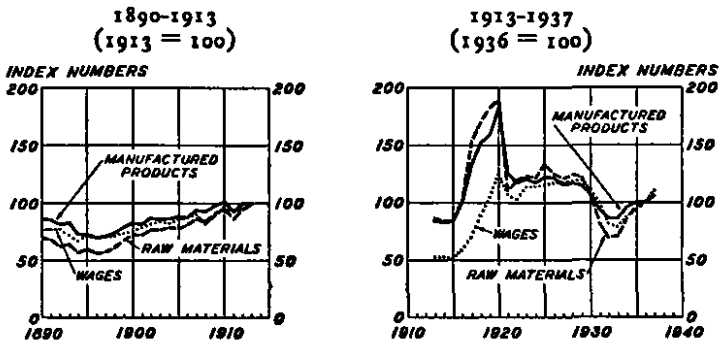
The chart on page 21 indicates that from 1896 to 1913 the rise in raw material prices was considerably more rapid than that in prices of manufactured products.

the flax or linseed oil industry; and pig iron was a "raw material" of the pig-iron products industry. But in the period following 1913, commodities were considered in their relation to manufacturing as a whole; and to make the classification complete it was therefore necessary to introduce a third group (which are not represented on the chart, except as they are included in "all commodities") which were labeled "semi-manufactured articles." In this third group were placed vegetable oils which, because they are themselves products of a manufacturing process, are no longer considered raw materials. Notwithstanding this more rigid definition, the number of commodities included in the second set of indexes was much greater than in the first.

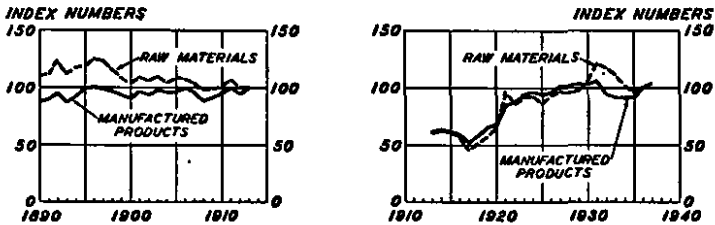
LONG-TIME MOVEMENT OF PRICES 21

When these curves are related to the wage earner's weekly income, they show a fairly marked decline in his ability to purchase the raw materials entering into the

INDEXES OF WEEKLY WAGES, OF PRICES OF MANUFACTURED PRODUCTS, AND OF RAW MATERIALS^a



Quantity Purchasable (at Wholesale Prices) with a Week's Wage



^a For data and sources, see table 2, App. B.

products which he consumed, whereas his command over manufactured products was much better maintained. His purchasing power for manufactured products was at the same level at the end of the 17-year period as at the beginning. The same level was reached also in 1906 and 1911. In all other years, however, his purchasing power was below this mark, in several of them by

considerable amounts, so that a straight line trend drawn for the whole period would slope slightly downward. It is regrettable that we have no feasible statistical means of measuring the "value added by manufacture" which the consumer received for his money during this period, but even without this, it seems clear that there must have been an increase, since in general the wholesale prices of manufactured goods failed to advance as much as did the prices of raw materials.

Turning to that part of the chart which covers the years 1913 to 1937, we again find sharp divergences in the movements of prices for the two groups of commodities. From the war-time peak, raw material prices fell somewhat more abruptly than did those of finished products but partially redressed this disparity during the later 20's, only to suffer a more extreme decline again during the ensuing depression. During the 20's the purchasing power of the wage earner's weekly income trended upward, but slightly more rapidly in terms of manufactured products than in terms of raw materials. During the depression the ratio between these two indexes returned to about that of 1921-22 but since then there has been a relatively greater gain of purchasing power in terms of manufactured products. There still remains unanswered the question whether the increase in workers' purchasing power over manufactured products was as great as was compatible with the rate of technological advance—which is impossible to measure directly and reduce to an index. We recall, however, the manufacturer's concern over the keenness of competition and his quest for price maintenance devices.

It would be interesting if at this point we could turn to a considerable list of representative industrial products

and present for each of them an authentic price series covering the period from 1870 to date. Such a procedure is impossible, not only because of the rather recent development of systematic and comprehensive methods of official price reporting, but also because of the difficulties already alluded to of identifying any considerable number of commodities in truly comparable form over so long a period. We have, however, selected for illustrative purposes two price series—print cloth and window glass—which are presented in the chart on page 24. For both these commodities, the rate of technological improvement has been considerable. One industry has been characterized in the main by keen competition and the other affected by a variety of organizational influences of the “trust” or industrial control type.

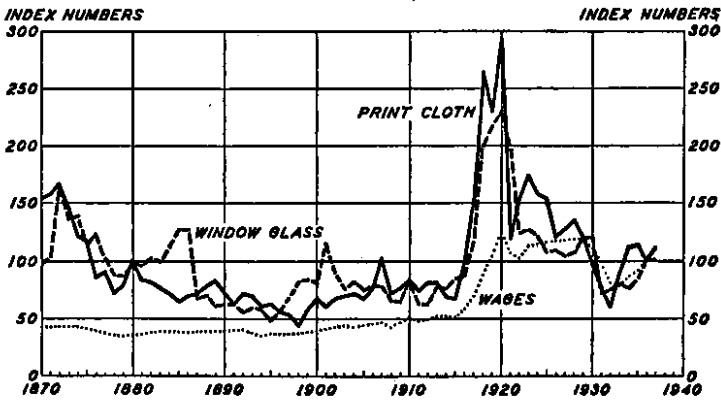
The amount of print cloth which could be purchased with a week's wages in 1936 was almost four times as great as that which could be bought for a much longer week's work in 1870. But approximately half this gain was made during the first fifteen years, and the improvement registered over the period of more than twenty years from the early 90's to 1914 amounted to only about a 25 per cent increase over the early 90's. After the spectacular rise and fall of print cloth prices between 1915 and 1921, there was between 1923 and 1936 a further increase of purchasing power of about one-third.

The precise meaning of these developments is by no means obvious from mere inspection of the chart. Nor has it been fully established in studies, some of them extensive, which have been made of the cotton textile industry. In view of the generally known facts as to unsatisfactory returns on considerable amounts of capital invested in this industry, the inference might be suggested that at least during the recent period the play of

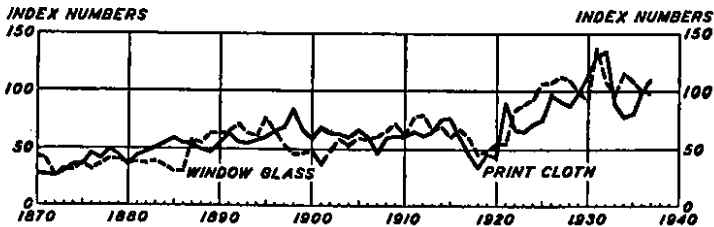
forces in this industry has conduced to the benefit of the consumer rather than to a profitable or perhaps even economical organization and operation for the industry itself.

Window glass prices show striking fluctuations in their relations to wage earner's incomes. This is a line of pro-

INDEXES OF WEEKLY WAGES AND OF WHOLESALE PRICES OF WINDOW GLASS AND PRINT CLOTH, 1870-1937^a
(1936 = 100)



Quantity Purchasable (at Wholesale Prices) with a Week's Wage



^a For data and sources, see table 3, App. B.

duction in which technological changes have been infrequent but pronounced and in which large-scale industrial control has been intermittent. The chart suggests that

this control was at times applied aggressively to the raising of prices but that such advances were followed by breath-taking collapses when these controls overshot their mark. Especially striking are the peak prices of 1872, 1885, 1886, and 1901. It is of particular interest to note what happened in 1887 and the swing from 1895 to 1902 and from 1920 to 1932. Such discrepancies can hardly be reconciled with the idea of sound price policy or orderly conduct of business, even from the standpoint of the individual concern.

As indicated at the beginning of this chapter, these statistics serve only to give a preliminary bird's-eye view of our problem. They show the superficial facts about the course of progress but are not adequate to reveal the wisdom or even the character of price policy so far as it was consciously exercised in the several industries. In trying to rate the accomplishments of an industry or company, it is necessary to supplement price data with a broad consideration of many pertinent facts concerning the conditions under which it has operated. In the major part of the book, therefore, we shall direct our study to these constituent phases of the problem of price policy as it faces the modern executive, illustrating our analysis by material drawn from past or current industrial situations. Before proceeding to this topical analysis, we pause in Chapter II to check the impressions derived from considering price indexes in this chapter against the accompanying trends in industrial profits.

CHAPTER II

THE RELATION OF PRICE TRENDS TO PROFIT TRENDS

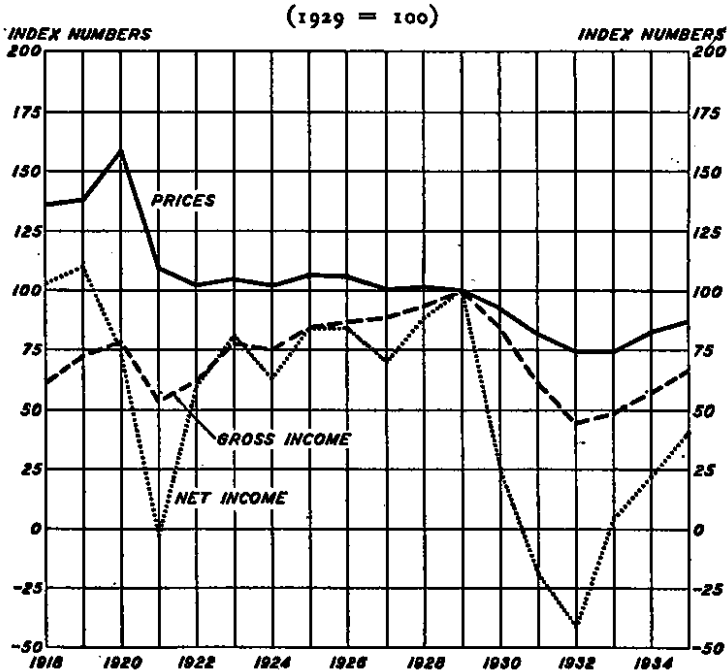
In the words and actions of many business men, the assumption appears implicit if not explicit that an up-trend of prices for their products or at least the maintenance of existing schedules is a condition necessary to their prosperity. In order to test this assumption, we shall, in the present chapter, compare the general course of prices and profits during the last few decades. After noting their behavior with reference to each other, we shall analyze in general terms the logical relationship between product costs, prices of manufactured goods, and net incomes of industrial concerns. This will serve as a preliminary test of the fact and logic of the price and profit relationship, leaving individual situations to be examined in later chapters.

MANUFACTURERS' PROFITS AND PRICES

Since the present study is concerned primarily with the relationship between prices and economic progress in the industrial sector of our economy, the index of prices which we shall employ in the present chapter is the same as that used in Chapter I, except that a different year is taken as the base. While the items from which this index is derived are not precisely the ones we would choose for our present purpose, it should serve reasonably well to show the general trend of prices for those classes of commodities which have probably been affected most by improvements in machinery and industrial techniques which bring about reductions in costs of fabrication. The chart on page 27 presents, in connection with the index

of prices of finished products, indexes of gross and net income of manufacturing corporations for the years 1918-35.

INDEXES OF COMMODITY PRICES AND OF GROSS AND NET INCOME OF MANUFACTURING CORPORATIONS, 1918-35^a



^a For data and sources, see table 4, App. B.

This index of profits has a serious shortcoming in that it is based on the *volume* of reported profits of manufacturing companies over this period of years,¹ whereas the significant item for our purpose is the *rate* of profits

¹ As reported to the Bureau of Internal Revenue, this "statutory net income" is net profits less tax-exempt interest and dividends received on capital stock of domestic corporations. Owing to the variations of accounting procedures employed because of taxation situations, needs of public financing, theories of the accountant, or other influences, the showing of the profit and loss statement does not necessarily pass at face value with the economist.

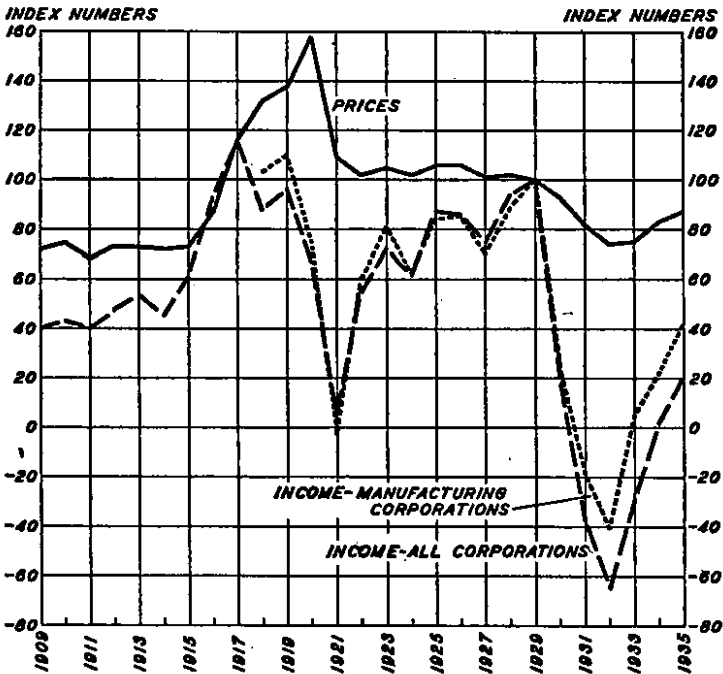
which these companies derived on their invested capital. We may be reasonably sure that the amount of this capital increased substantially over the period, and thus the index for the rate of profits would presumably be lower in the later years than the index of total profits shown in our chart. No trustworthy figures, however, are available for making such an index covering the whole period under examination. Since 1926, we have figures showing ratio of net incomes (before and after tax deductions) to capital stock and to capital stock and surplus. They are indicated as separate points on the chart. But the lack of correspondence between capital stock plus surplus and capital actually invested in the business makes it unwise to give these figures much credence as to the actual rate of profit. They do, however, bear out the story told by the other graphs as to the trend.

The major impression conveyed by this chart, with its recognized limitations, is that profits do not necessarily rise and fall in step with changes in the trend of prices of the commodities concerned. Thus we see from 1921 to 1929 a pronounced rise in total net profits, although the price index dropped from 109.3 to 100 during the same period. The year 1921 was, of course, one of business recession, but even if that year were dropped from our consideration, it is evident from the chart that the index of profits tended to gain relatively to prices over the period from 1920 to 1929. Obviously, profits fell more than the decline of prices during the period of impaired demand after the depression of the early 30's set in.

Deferring for the moment any detailed discussion of points which appear significant with reference to this period, we may turn to the chart on page 29 for the purpose of observing price and profit trends in a somewhat

longer time perspective. In order to carry our line of net income back to 1909 we have to use the data for all corporations, since data for manufacturing corporations were not separated from others prior to 1918. However, it will be seen that there was great similarity in the

INDEXES OF WHOLESALE PRICES OF FINISHED PRODUCTS AND OF NET INCOME OF ALL CORPORATIONS, 1909-35, AND OF NET INCOME OF MANUFACTURING CORPORATIONS, 1918-35^a
(1929 = 100)



^a For data and sources, see table 5, App. B.-

general movement of the index for net income of all corporations and that for income of manufacturing corporations during the period for which the latter figure is available and we may infer that this similarity obtained also in the earlier period. The chief difference appears to

be that the index for manufacturing corporations alone is characterized by somewhat greater amplitude in its fluctuations and a more rapid rate of movement in rising or falling from its extreme points. This being so, we may assume that the curve for profits of manufacturing corporations from 1909 to 1917, were it available, would probably show fluctuations similar to those found in the curve for all corporations, and its top in 1917 would be materially higher than the 100 line of the chart.

While unfortunately this chart does not permit of comparison of the price and profit lines for the whole period from the late 90's to the opening of the World War, it affords opportunity to compare two periods which present contrasting features. Both were times of increasing corporate profits; but, whereas the index of prices of manufactured commodities was trending slightly downward in the post-war period, it was trending upward in the pre-war period. From 1909 to 1914, our chart shows both price and profit lines moving definitely upward, their trends being approximately parallel, though possibly converging slightly. But does this mean that the manufacturer was getting increasing amounts for his services during this period?

To answer this question, we must recall the analysis presented in the preceding chapter. It was there pointed out that the price of finished products embraces both "value added by manufacture" and cost of raw materials. The chart on page 21 shows that raw material prices were rising more rapidly than the prices of manufactured goods during the pre-war period, whereas they were declining relatively during the more recent period. Consequently it is probable that returns on processing or fabrication were actually trending downward during the earlier period and rising from 1921 to 1929. On the other hand, wage rates barely kept pace with the rise in

prices at which manufacturers sold their goods during the first period, whereas they rose substantially through the 20's while prices declined. It was possible for profits to increase in both instances but for different reasons.

In view of the magnitude of the increases in total profits (66 per cent from 1922 to 1929), it is clear that this rise was not fully offset by the expansion of invested capital.² In other words, there is no reason to believe that the rate at which profits were trending upward was significantly different in the period while prices were increasing than it was in the years of moderately declining prices.

We are of course not contending that the foregoing simple comparisons of general statistical evidence indicate that there is no relation between net income and prices. Such a conclusion would be absurd. We are simply pointing out the fact that a great many other factors than price per unit of product enter into the determination of the ultimate profitableness of industrial operations. Hence so simple a conclusion as that high prices mean high profits and vice versa is not borne out by the evidence. So far as available data throw light on our problem, they definitely challenge the validity of the popular assumption that maintenance or advance of commodity prices is indispensable to the prosperity of the concerns producing them. Let us now proceed to examine the logic of the situation as it works out for the actual producer.

PRICES AND PRODUCTION COSTS

What are the conditions which determine the profits of a manufacturing establishment and how are these related to the pricing of its products? Gross income for any

²This increase in capitalization of all manufacturing corporations from 1922 to 1929 is estimated at 15.3 billion dollars, or about 41 per cent. See Harold G. Moulton, *Income and Economic Progress*, p. 144.

enterprise is the product of the number of units sold and the price per unit; net income is the residue of gross income less costs. For manufacturing establishments costs divide into two general classes, namely, outlays for raw materials and costs of fabrication. As already mentioned at several points in our discussion, the present inquiry relates primarily to the zone of manufacturing and, so far as possible, we seek to avoid the consideration of influences (such as prices of raw materials) originating outside that zone. Hence it is easier to clarify the relationships in which we are interested if we consider the margin of selling price over raw material cost as the price of the manufacturer's services included in each unit of the completed product. This margin times volume gives the gross returns for manufacturing, and deducting the costs incident to that process leaves net income.

Were the three variables (price, volume, cost) completely independent of each other, so that a change in one did not affect either of the others, it would follow that any increase in price margin or volume and any decrease in unit cost of fabrication would result in a proportionate increase in net income. But as for most companies of the type we are considering, they are in fact not independent.⁸ It is to be expected that a change in price will significantly affect volume and that this will cause (or at least make possible) a modification of unit cost. Therefore, the way in which the profits of an individual manufacturing firm are affected by the pricing of its

⁸ Under classical assumptions, each individual manufacturer would turn out such a small portion of the total supply that any effect which change in his scale of operations would have upon price could be ignored. Likewise under some circumstances it is possible that his unit cost would be but little affected. But the present study is directed specifically to an area in which unit cost is generally closely related to volume and in which a small number of firms produce such a large percentage of the total supply that each is a significant factor in the total market.

product depends upon the character of the interrelationships among price, volume, and costs. It is not possible within the scope of this study to explore all the complex and varied influences which affect these relationships. But it is worth while to go into their logical basis far enough to reveal the issues which we shall need to analyze in the remainder of the book.

It should be clear that the effect upon gross returns for fabrication which results from a reduction in the margin of selling price over raw material costs varies according to the extent to which volume is thereby increased. If sales increase proportionately as the margin is reduced, these returns will be unaffected, whereas any more than proportionate increase in sales will enlarge total gross returns, and conversely a smaller sales response will decrease them. When the company involved is sufficiently important in the industry so that it controls a large proportion of the total output or if other firms immediately make a similar adjustment in their prices, the sales response to a lowering of price depends upon the rate at which total consumption expands—in other words, upon the elasticity of consumer demand. Various conditions influence this rate and the more important of them should be mentioned because of their bearing upon later phases of our study.

First, and probably most obvious, is the character of the product and its significance to consumers. If the product is substantially a necessity of which most consumers require a certain amount but only that, then its use is likely to vary less than in proportion to changes in price.⁴ On the other hand, if the article is one of elastic demand, many consumers having been unable to satisfy

⁴ Likewise, some articles are used largely in conjunction with certain others. Demand for them has little independent elasticity. Such joint demand is discussed in Chap. VI, p. 123.

their wants or even needs at previous price levels, lowering the price level will produce a great expansion in the market. Sometimes lowering the price of an article will tap an entirely different demand by enabling it to become a substitute for some other article of wide use. The possibility of increasing sales by this method may be considerable if the price of the alternative commodity is maintained.

Second, is the point that the *immediate* consumption response may be much different from that which would develop over a period of years. Some products which are not immediately accepted as substitutes may become effective competitors after a period long enough for consumer habits and customs to change. Much depends upon the promptness with which the prices of competing products are adjusted; price maintenance in a given line furnishes a powerful incentive to the improvement and development of substitutes. Especially in the cases of new products or those whose reduction in price is great enough to take the commodity out of the class of luxuries available only to a restricted group of consumers with high incomes and place it within reach of moderate or low income groups, some time may be required to develop the existing potential demand.

Finally, and often overlooked, there is the fact that the effect which a reduction in the manufacturer's margin has upon his volume of sales depends in part upon the size of that margin in relation to the price at which the commodity is offered to the ultimate consumer. With any given demand conditions, the change in this latter price determines the amount by which volume will increase. But to the extent that raw material cost and distribution charges are large as compared with the manufacturer's margin, it follows that any reduction in the latter will bring about a correspondingly smaller

proportionate reduction in retail price, and hence the resulting increase in volume will be small.

The effects which price reductions have upon net income may differ from those upon gross returns, depending upon the rate at which costs decline with expansion in volume. In modern industrial production many of the methods and economies which contribute towards lowering unit costs are possible only if volume is large, and typically a significant increase in volume would result in some reduction even for those firms which already operate very efficiently. Hence, the savings in unit costs resulting from expanded volume cause net income to expand more than proportionately to gross income.

The situations in which economies result from increasing the volume of output apply to two broad groups of companies. One includes those enterprises which are operating substantially below the capacity of existing plant and equipment. Such a firm ordinarily can expand its output with little if any more than a proportionate increase in operating expenses, with overhead costs remaining practically unchanged. Hence, any increase in sales spreads this overhead over a larger volume and thereby brings about a significant reduction in unit costs.

The other group includes firms already operating at or near the capacity of their present facilities. For these companies any increase in output demands an expansion of their investment and hence they would not be able to spread existing overhead over a larger number of units of product, as would those in the preceding group. But this does not mean that they cannot lower costs by operating on a larger scale. On the contrary it is to be expected that in enlarging their plant to make possible the greater output they can utilize more efficient methods and equip-

ment than were possible before and thereby lower their unit costs of operation.⁵ Even if this is not the case, and their gains are less striking than those available to concerns taking up slack in capacity already installed, they may if permanent in character be more than sufficient to warrant a downward adjustment of price in the interest of long-run gains from the enlargement of sales volume and reduction of unit costs. Because of their importance in our analysis we examine more fully in Chapters IV and V the conditions affecting the relation between volume and costs in both these types of situation.

For purposes of simplicity, we have been concentrating attention on unit operating costs and volume of sales in their relation to price changes and to profits. Obviously any full discussion of industrial profits would have to take into account changes in raw material prices. Some of these are unrelated to our present inquiry but in some cases expansion of the market for a finished product significantly increases the demand for a given raw material. In such event, the price of the raw material would tend to rise if it were one affected by natural scarcity or increasing costs of production. In numerous cases, however, it may be expected that under modern conditions the stepping up of demand will of itself serve to stimulate technological improvements which will lower the cost of the raw material⁶ or serve to bring forward a cheaper substitute.⁷

In somewhat similar manner profits anticipated

⁵ Some items of overhead such as executives' salaries and perhaps administrative costs might remain unchanged.

⁶ This was notably the case in passing from wild to plantation rubber.

⁷ Likewise "windfall" profits—or losses—may result from either adventitious or speculative accumulations or liquidations of inventory either of raw materials or of finished products. Such gains and losses, however, are essentially foreign to the long-run problems of strictly operating costs which we are here considering.

through expansion of business in response to lower prices might be defeated by increase in taxes or by rising labor costs if certain types of skilled labor proved to be relatively scarce. Advances in wage rates through organization pressures unrelated to the expansion movement itself might similarly curtail profits, but labor-saving equipment or management devices operate powerfully to offset increases in wage rates. In so far as pressure for higher wages grows out of the worker's desire to raise his standard of living, the manufacturer's lowering of commodity prices itself tends to lessen this pressure.

THE COMPLEX RELATIONSHIP OF PRICES, PROFITS, AND WELFARE

Thus far we have been talking of unit price in the main as though it were an absolute quantity attached to a specifically identified commodity. As a matter of fact, what the consumer buys is really a series of services or satisfactions which are embodied in an article. While such an article may remain nominally the same, it may be changed considerably in the quality of its service or, on the other hand, consumers may have substantially the same services or satisfactions made available to them through articles which change considerably in their physical form. Often these changes in the products and the satisfactions they yield may be more significant than the figures shown on the price tag. If the manufacturer makes his product more desirable without raising price or if he devises a cheaper substitute, he has contributed to the well-being of the consumer in ways which are reflected only inadequately if at all by price indexes. In Chapter III we shall give a much more detailed analysis of this process with concrete illustrations of the way in which it is working out.

But there are also other alternatives than price re-

duction which are available to the business man as a means of expanding his sales and making profits at the same time—or by reason of the fact—that he serves the consumer. He may decide that the better policy is to leave a given price where it is, but to intensify sales effort through advertising or otherwise. Instalment selling, free inspection and maintenance service, enhancement of style features, seasonality, or frequency of model changes may be employed as devices for attracting or retaining customers.⁹ These all involve deductions from the net returns of the seller and the question eventually arises whether more healthy growth in business would not be secured through direct price reduction rather than certain of these indirect methods of sales stimulation.

At all events, the business executive has to consider price, volume, quality, service, and alternative methods of sales promotion as a bundle of closely interrelated problems. It appears at times that he seems to regard price maintenance as the only proper line of executive policy and reduction or “price-cutting” as an inherently undesirable procedure which he should reserve for use only as a last resort. The analysis in *Income and Economic Progress* led to the contrary view; namely, that he should keep the constructive aspects of price lowering in the forefront of his thinking, trying always to see how far enlargement of values to the consumer can be made the strategic point of attack in promoting the growth of his business on a sound and profitable basis, marshaling other devices to the support of this general strategy. We shall now proceed in later chapters of this book to consider the actual application of such a policy in concrete business situations.

⁹ For fuller discussion, see Chap. VI.

CHAPTER III

ECONOMIC PROGRESS THROUGH CHANGE IN THE TYPE OF GOODS PRODUCED

The first object of industry is to produce goods, and the test of what makes a good in the economic sense is its capacity to satisfy people's wants. This requires not merely that it possess certain inherent qualities but that such want-satisfying powers shall be brought within the reach of the consuming public—most of whom are poor. If the desired qualities can be furnished only at high prices, few units can be sold, and the business of supplying them will be small. To get a real grasp of the problem of industrial price-making, therefore, we must consider first the question of what, in society's basic interest, it is worth while to put into an article.

It may be that consumers would obtain more satisfaction per dollar from an improved type of goods which would necessarily have to be sold at some advance in price. Or, it may be that the greatest service would be rendered by the producer who simultaneously improves quality and lowers price, without, however, lowering price as much as would be possible if less consideration were given to quality. On the other hand, consumers may be best served if they are provided with an article of simpler design, less durability, or fewer accessories—including service—thus enabling them to enjoy a low-priced substitute for what the rich enjoy at a range of prices beyond the poor man's reach.

CONSUMER GAINS THROUGH CHANGE IN MATERIAL OR DESIGN

It might seem axiomatic that the producer who wishes to be successful would try to make what he supplies to

the consumer as economical as circumstances would permit. Yet commercial history is filled with cases of producers who were so little concerned about making the consumer's dollar go as far as possible that they offered him only goods which were elaborated beyond what many consumers really wanted. The difficulty sometimes encountered in trying to buy an automobile without unwanted gadgets is a case in point. Under "full line forcing" this goes to the point of making the buyer take additional articles he does not want in order to get those which he does. Under "block booking" of moving picture films an exhibitor must buy a producer's whole output in order to get the films he really wants.

In some cases, manufacturers have even been willing to sabotage the interests of their customers, in the hope of drawing some revenue for themselves from what was actual waste to the user of the article. Thus, the manufactured ice industry, until the competition of the electric refrigerator compelled it to change its ways, sought to thwart the introduction of improved ice boxes which, because of better insulation, would make a unit of the ice-maker's product go farther in rendering a service to the housewife or butcher.

But a more enlightened view seems to be gaining ground in recent years. In our identification and description of those forces and business practices which have served to promote price progress, first place will be given to what appears to be a growing tendency on the part of manufacturers so to design their products that they will more fully satisfy the real needs of the people and, from a physical standpoint, be more like the product which the consumer would make for himself if he had the necessary knowledge and power.

In concrete illustration, take the electric refrigerator.

This machine is one of those civilization-changing innovations, the pioneers of which deserve great credit for their skill and daring in simplifying and installing within the limits of one's kitchen a mechanical and thermal process which is vital to the health and pleasure of the people, but was formerly so unwieldy and (owing to ammonia fumes and power-plant grime) so offensive that it was relegated to the other side of the railroad tracks. After this mechanical feat had been accomplished, however, the cost of household mechanical refrigerators was still a formidable bar to their introduction among the masses of the people.

The "old-line" manufacturers tenaciously sought to maintain prices on the semi-luxury level of 1928 and 1929 even after depression had engendered "consumer resistance." By the fall of 1931, however, they capitulated with a pronounced price slash, largely in response to the competition offered by a number of independents who had come in as pace-makers in giving the consumer a much larger dollar's worth. These low-price competitors not only introduced economies in manufacture but also, in the distributing process, used department store and mail order distribution as a means of lowering selling costs. Responding to these stimuli and the need for holding their market through years of depression, various manufacturers have introduced cheaper and more efficient types of compressor, availed themselves of the strength of steel walls to dispense with any separate framework, employed more economical methods of insulation, and are now supplying a more convenient, larger, more powerful, and more beautiful refrigerator at greatly reduced prices.

The matter of size is particularly pertinent to our present discussion. In order to get a low-priced electric

refrigerator in the early days, it was necessary to accept one of so small a size as to be hardly practicable for the typical family. Larger ones, of course, were available, but the difference in the price at which they were sold was out of proportion to the actual difference in cost of manufacture. Full advantage was not taken of this area of the consumer's market, and the extent to which people's wants were satisfied was thus limited. Realizing this situation, one of the large mail order houses decided in 1934 to offer a refrigerator with a capacity of six cubic feet at the price formerly charged for those of three and a half or four cubic feet capacity. Production of this larger box of course entailed some additional manufacturing costs but not in proportion to the greater service which the product rendered to the consumer. The larger size, therefore, was the equivalent of a price reduction. Moreover, it was a price reduction of the most effective kind, since it brought this appliance from a position where it gave the housewife only a cramped and unsatisfactory service to one which met her needs so effectively as to seem almost indispensable. At about the same time, this line of effort to give the consumer greater satisfaction per dollar was pushed still farther. Emphasis was now placed on considerations of beauty, and well-known artists were employed to design both exterior and interior lines and proportions.

The promotional aspect of these developments is of course apparent, and the enterprise shown by one of the mail order companies placed it among the three largest merchandisers of refrigerators. Under the competition for both mechanical perfection and aesthetic appeal, the once prosaic ice box has been streamlined into a beautiful furnishing for the modern kitchen as well as a highly efficient machine. All this has resulted in practically

establishing the mechanical refrigerator as a conventional necessity for American apartments and homes of all the upper and middle grades.¹

The question which now challenges the refrigerator industry is whether in view of the volume of use thus attained and the yet greater volume which could be developed in the low-price brackets, mass production methods do not permit of the production of a serviceable unit at still lower prices. If, as many believe, the expansion of low-cost housing presents one of the greatest opportunities for revival and maintenance of business activity during the years just ahead, the cheapening of this and other household appliances has an important rôle to play.

Putting into products that which involves small if any cost to the producer but great satisfaction to the consumer, instead of confining efforts to turning out some stereotyped product, constitutes a particularly happy application of the business policy of giving the most for the money. A case of a manufacturer pursuing this double aim of improving quality and lowering cost

¹The differentiation in price through which this has been effected is worth noting. Price reductions have brought a six-foot box of standard type, representing the basic engineering improvements of structure and mechanical operation, down to slightly under \$100. This meets the maximum sanitary requirement by being finished inside in porcelain, while the outside is simply enameled. This surface, however, is practically the equivalent in appearance and is actually more durable under conditions of family use where hard knocks result in chipping corners of the porcelain-covered box. The difference in price to the user is about \$25, but the difference in cost to the manufacturer can be only a fraction of that amount. Higher price classes have knee door-openers, automatic ice cube release, additional inside accessories, automatic current controls, and ingenious "gadgets" which run the price of de luxe and super de luxe models of the same size up to about \$250. The significant point for our present purpose is that these additional features (which presumably are highly profitable to the manufacturer) are optional with the buyer. He can now get the basic service and necessary size at prices which represent extreme reductions from those of six or eight years ago.

—roughly paralleling the refrigerator development—has recently occurred in connection with that very old industry, the making of kitchen stoves. A large mail order house decided that it was practically as cheap to make a stove with a large oven as one with a small oven. It was mainly a matter of making the holes in certain stampings bigger. Thus, small adaptations made possible an 18-inch oven, which, from the housewife's standpoint, is much more satisfactory than the 16-inch of the customary design. At the time when the size of the oven was increased, various other improvements were made in the quality of the stove, and the model was then offered at a drastic reduction in price. The policy of combining greater serviceability and lower price followed by this company not merely once but in each of several successive years, enabled it to keep its stove factory going at a time when industry generally was severely depressed. This company was even able, within the space of a few years, to increase its proportion of the national stove business (of the given kind) from 1.5 or 2 per cent to about 12 per cent of the total.

As a somewhat fuller illustration of the way in which the quality of manufactured products has been advancing year by year in many divisions of industry, our attention may for a time be focused upon practices in the production of agricultural implements. Manufacturers of agricultural implements, like other makers of machinery, have a two-fold business. They sell new machines; and they sell replacement parts for old machines. Obviously, the better the original machine, the more it will ordinarily cost to make it, and the smaller the replacement business. Yet leading manufacturers of agricultural equipment go to great pains to build their machinery in such a way that a minimum of replacement

will be required. Farm equipment gets rough usage. And, because the farmer is not specialized as a mechanic and is distant from places where repair work can be done or repair parts obtained, it is more than an annoyance to have a reaper broken or a plow twisted. One company keeps a record of the sale of replacement parts, and when the demand for a given part runs above a certain point, investigation is instituted to determine what is wrong and how improved construction could remedy the defect.

Some measure of the character and value of the improvements which have taken place in the quality and serviceability of agricultural implements over a period of years is fortunately available to us through the work of a committee of agricultural engineers who made a report on the changes in the quality of twenty-five farm machines during a period of approximately twenty years, ending in 1932.³ The judgment of this committee with respect to the amount of improvement in the quality⁴ of each of the twenty-five products during these years was expressed in figures, which ranged from a low of 30 per cent to a high of 115 per cent—a simple average of the ratings for all the products coming out at 67 per cent. To illustrate what they found we will take a quite simple agricultural implement.

The one-horse walking plow, one of the oldest of farm implements, was long supposed to have passed the stage where it could be much improved. Almost every other type of farm machine changed more, between 1910-14 and 1932, than did walking plows—only the

³ J. B. Davidson, G. W. McCuen, and R. U. Blasingame, *Report of an Inquiry into Changes in Quality Values of Farm Machines between 1910-14 and 1932* (published by the American Society of Agricultural Engineers).

⁴ Considering quality of work done, durability, ease of operation, and comfort of operator.

peg-tooth harrow scoring less in percentage of improvement, and the spring-tooth harrow, grain drill, and side-delivery rake and tedder the same amount. Yet, after a great deal of experimental work, extending over the years 1915 to 1927, there were in 1927, 1928, and 1932 introduced into the one-horse walking plow the following improvements—which, according to the engineers, increased the implement's utility to the farmer by 40 per cent.

In 1910-14, all one-horse walking plows were of the "footed beam" type, with plow bottom, share mold, and landside all assembled direct on the beam, which was then a part of the plow bottom. It was difficult to keep such a plow in correct relation to the beam. In marked contrast with this construction, the plow as improved between 1927 and 1932 has a forged steel frog, stronger and simpler. Shares are readily detachable for sharpening, and the beam is very easily changed in case it should become sprung. Clevis pins are now made of steel with a construction which prevents the evener from dropping on the horse's heels. The plow beam is now made of better and heavier material, the carbon having been increased 20 points. This strengthening prevents bending of the beam, which caused trouble in the old plow. A separate clip holds the share against the edge of the mold, and there are replaceable hard plates at points where wear is exceptionally heavy.

These technical details have been cited because they illustrate how thoroughgoing has been the effort to redesign even the simplest implements, so that they may more satisfactorily meet the needs and problems of the farmer. To some extent these improvements mean increased cost of manufacture. But the significant point is not that the manufacturer is spending more, but that he

is throwing himself sympathetically and intensively into the task of making sure that what he does put into his product will count for the most from the consumer's standpoint.

Though such drives to improve the quality of goods have been by no means universal, they must nevertheless be set down as constituting one of the most characteristic aspects of many important branches of present-day American industry. Progress of this sort is particularly widespread and conspicuous in the manufacture of mechanical equipment of all kinds from small electric motors to airplanes. It is impossible to go through the plant of a progressive manufacturer without being impressed by the constant struggle to evolve a more satisfactory product. The most painstaking effort is made to determine just how strong or how hard every piece of metal (or even layer of metal) should be. New forms of heat treatment are introduced, new techniques of control set up, more careful means of testing installed. And as a result of these and other measures, the manufactured products of today are coming to have a reliability, a freedom from breakdown, and a span of life that makes them incomparably superior to what was available even a few years ago—especially in products sold at a moderate or low price.

Sometimes improvements in quality are obtained at practically the same, or even lower, cost. Sometimes, even though the direct cost is somewhat greater, the larger demand which comes with the improvement in the product makes for lower total cost, and thus permits lower prices than would have been practicable without the improvement in quality. In other cases, however, improved quality is accompanied by higher prices, or at least prices that are not reduced as much as would other-

wise have been the case. Where improved quality means a noticeable increase in cost, it is, of course, necessary to weigh all aspects of the situation before deciding which course is preferable. But there should be no hesitation in saying that rise in quality (price remaining unchanged) conforms to the general concept of price reduction in almost, though perhaps not exactly, the same sense as a lowering of money price (quality remaining the same). Improvement in service and lowering of money price must be regarded as complementary objectives, each of which should be pursued to the limit, subject only to the need for reconciliation of objectives and method, where it is found that progress along the one path can be made only at too great an expense of progress along the other.

MEETING CONSUMER WANTS WITH SIMPLER AND CHEAPER ARTICLES

While improvement in quality is often the most satisfactory means of giving the consumer more for his dollar, it is to reduction in actual prices as made possible by reduction in costs that we must look in even larger measure as the means of bringing to the masses as high a standard of living as modern science and improved industrial organization appear to have made possible. This often involves what is in a sense a lowering in quality.

Traditionally, when productive plant was less adequate and productive techniques less efficient, the fabrication of goods was directed primarily to serving the wealthy classes of society, while the poor had to content themselves with home-made articles or the crudest products of manufacture. Even the rich spent their incomes on an extremely limited range of commodities, and for

those they were accustomed to pay extravagantly. Though industrial progress has now greatly changed all this, any novel industrial product or improved form of an old product still is relatively expensive when it is first introduced to the market. The instinct of workmanship and the praiseworthy desire to build for his product a record of satisfactory service leads the conscientious producer to make an article so good as often to place it at first beyond the reach of the masses.

During the last generation or so, the whole background of the problem of selling goods has been undergoing a radical change. The masses of the people now have at least some small surplus with which they can venture beyond the bare necessities and buy articles of their choice, provided these can be produced for prices within their means. And even in the case of the well-to-do, the great increase in the variety of goods and the greater flexibility in the general pattern of consumption has made it necessary and possible for people to make choices. Those who have money are no longer under as great pressure as formerly to buy certain obviously and unnecessarily expensive articles, and since they must in any case choose, the price of an article may well be the determining factor. Why buy an expensive car when a low-priced car would leave enough balance for a seaside shack? Fortunately, coordinate with the development of this demand for cheaper goods, there have also been emerging new materials, new processes, and new concepts of design which have greatly widened the possibility of producing goods differently, and at a lower cost.

For some time past, there has been, therefore, a rapidly growing field, both for profit and for serving society, in taking some commodity or service which had

previously been too costly to be widely used and devising some way in which the essential utilities desired could be provided at materially less cost.

This fact that new articles supplied to consumers may differ considerably from the old ones complicates the task of appraising price trends. The new article may not be as good as the old one. Though offered at a lower price, its cost may have been lowered still more, so that the producer has increased his own margin. Hence, it is sometimes argued that much of the low-priced merchandise which has been placed on the market has not involved genuine price reduction—or, at least, that the fact that such goods have been brought out has no direct bearing on the larger problem of equating purchasing power with productive capacity. But in fact reorganization of production and alteration in design makes available to people many things which they need at prices which otherwise would be impossible, thus opening new areas of business and new areas of consumer satisfaction. Radical changing of both product and processes, with a view to making it possible to produce goods at a low price (frequently predetermined), has been the very core of most of the price reduction programs which have been put through in the most progressive industries. This constitutes the most constructive approach not only to the task of producing a greater abundance of goods, but to that of enabling the public to buy the full-capacity output of industry.

When price is lowered *first* (at least in the mind of the producer), and *then* the technological progress which will permit that lower price is brought about, purchasing power is created simultaneously with the technological advance itself, instead of there being a lag. And if the drive to reduce cost succeeds in more than matching the

reduction in price, the enhanced profits of the producer will likely be spent in constructing the larger capacity which the increased scope of the business calls for. It should be noted further that the determination that price shall be reduced and that some way must be found which will correspondingly cut costs, is one of the most powerful means of effecting technological progress. This is a sort of progress, moreover, which is almost 100 per cent gain because, owing to the simultaneous lowering of price, it constitutes no threat to the adequacy of purchasing power, and the least possible threat to the employment of those in the given industry and in other industries.

The redesigning of goods so that they can be sold at a lower price does not necessarily mean an inferior product.⁴ It does mean that considerations of cost will have a great deal to do with the basic lines along which the development of a product is attempted. If the materials customarily used are expensive, it means a search for cheaper materials. If the design is complicated, it means an effort at simplification. If parts of the product serve no important purpose, it means their elimination. Happily, it is frequently found that what is cheaper is in certain respects better. That is, as soon as a producer breaks away from tradition and investigates other ways of doing things, he is likely to find that something which was previously overlooked or regarded as beneath consideration really holds unexpected possibilities.

⁴ Nor that it will take the place of more expensive types. Portable typewriters do not displace standard machines in the office but supply an additional need of travelers and home workers. The dependence which students come to place upon them stimulates their subsequent purchase of larger machines. Similarly, many a child who learns to use a "Brownie" camera becomes a purchaser of increasingly expensive apparatus in his older years, whereas the cheaper equipment does not displace the more expensive among professional users. See also p. 107.

Large savings of expense at certain points, moreover, may permit a producer to add something which may really be of greater importance at some other point; the general rule being to keep cutting out that which is costly—but can be dispensed with—and adding that which is useful but inexpensive. It should not be overlooked, moreover, that the very care that an article shall in its fundamentals be inexpensive, so that it can be priced low and sold in great quantities, permits a perfection in the technique of its production that may make it, as respects many of its details, amazingly efficient—and, especially in these latter days of increased attention to appearance, strikingly beautiful.

Historically speaking, by far the most important single example of the designing of a product, with a special view to sale at a low price—both for itself and because of its influence on the American manufacturing tradition—was Ford's Model T. In some respects, this automobile was built at a sacrifice of qualities possessed by almost all the other cars of its day. But on other and more important counts, it was superior to most other makes—at least for a long time after its first coming out.

One major step toward reduction in cost was in the transition from a heavy to a light type of car, with economies not only in construction but in consumption of gasoline and wear on tires. A second great step was the change from a product built to last a lifetime to one built to give the maximum mileage anyone should expect within the period before it was outmoded, after which it should move through the junk yard back to the steel furnace to be reborn as a new car embodying the improvements which were being so rapidly developed. Possibly the time will come when the technology of automobile manufacturing and our ideas of beauty and comfort or

appreciation of mere change will be reduced to the point where it will be better economy to build more cars in the Rolls Royce tradition. Even then, it would probably be desirable to continue the lower cost design to come within the reach of large numbers of buyers in the low income groups.

Certainly during the past thirty years, the emphasis on low-cost types has accelerated the progress of the industry and enlarged the service to consumers. For some years back, the movement toward lower automobile prices has encountered a "floor" in the used-car market, and competition has been toward giving added quality without increase or with only small increase in price. More recently, the appearance of additional makes of midget cars seems to indicate the possibility that here is another thrust toward a still lower priced field.⁵

At all events, the simultaneous insistence on low-cost design and superior, even luxurious quality, has resulted in the development of low-priced automobiles possessing a degree of comfort and beauty which could never have been obtained had automobile makers thought only of quality and confined their efforts to the narrow field of high-priced demand.

In the automobile industry, it is the custom to start with a pretty definite limit as to what the price of a new model can be, and to require that stipulated qualities must be delivered at that price. This requirement, that costs must be kept within a certain limit, is applied both to the departments of an automobile company's own organization, and to the hundreds and thousands of companies, large or small, which supply the metals, glass, textiles, wood, rubber, and other materials—or the parts manufactured from these materials—which go into automo-

⁵ See p. 117.

biles. It is this relationship between the automobile industry and almost every other kind of manufacturing which helps explain the very wide influence of this industry's price philosophy on manufacturing in general.

It has become the custom for many industrial companies which use parts made by others to attempt a similarly strong control over the prices (and ultimately the costs) of the goods which they use. Similar inter-company pressure for low-priced goods is exercised by the great companies engaged in the distribution of manufactured goods. The merchandising policy of mail order houses, department stores, chain stores of all types—grocery, five and ten-cent, specialty, department store chains—exerts a strong and effective influence toward the making of low prices.

This pressure has become so strong that it is familiarly referred to as "the bludgeon." The continued patronage of a customer (and perhaps even the survival of the seller) depends on the ability of the underlying concerns to effect economies which on first examination appear to be beyond possibility. Yet again and again the automobile makers have drawn the required response from parts makers; just as, within their own organizations, they have, upon demand, effected seeming miracles. The pressure exerted by merchandisers has forced a reshaping of manufacturing technique and made possible the sale of goods of excellent quality in a wide variety of lines at unprecedentedly low prices.

A simple illustration of the kind of adaptation which may make a low price possible is afforded by the case of a Milwaukee manufacturer of plumbing supplies. This manufacturer was told by the mail order house which he supplied that it must have a brass hose nozzle at a certain

low price. Brass is expensive and production for sale at the price named seemed impossible. Under pressure of necessity, however, this manufacturer hit upon the idea of reducing the length of the nozzle to about half of what had been customary. The shorter nozzle would serve the purpose equally well and could be produced within the prescribed cost limit. Again the same manufacturer, apparently on his own initiative, wished to reduce the cost of bathtub fixtures, and yet make it possible for people to have a choice of tub or shower baths. So he devised a very simple arrangement by which the supply of hot and cold water could be regulated through a single set of faucets, and yet issue either as a shower or directly into the tub.

Manufacture for sale at a low price may eventually lead to a real advance in the ability of an industry to render low cost service to the public, even though the original effort in this direction may not be wholly satisfactory. The Ford company entered tractor-making on a large scale about 1922 to meet a need for a tractor so much lighter and less expensive as to come within the reach of ordinary farmers. Mr. Ford had been keenly interested in the farm power problem from his boyhood days on, and his company had constructed tractors in considerable number during the war. However, they did not have the long experience with building equipment to be operated under farm conditions which was possessed by some of those in the agricultural implement business proper. The Fordson tractor, after rather discouraging experiences, was withdrawn from the American farm market. Though it had demonstrated the fact that the small family farm needed a tractor priced at \$1,000 or less, it had in certain respects overshot the mark. It was

not capable of rendering efficiently the service which a tractor must deliver if it were really to displace the horses on the farm.

Seasoned makers of agricultural implements, however, studied the requirements until they were able to produce a type of tractor which, while still embodying those mechanical principles which experience had shown to be essential for a successful farm tractor, could be sold at a greatly reduced price. These new tractors were lighter and perhaps lacked some things which had been put into the larger models, but their better adaptability to the economic as well as the mechanical needs of the farmer greatly widened the possibility of using tractors in place of horses on general family farms.

In the field of housing, there has been some redesigning in the interest of economy. This, in a small degree at least, has tended to offset the general trend towards higher costs because of the higher standards of comfort, convenience, and beauty, or because of stricter building regulations. Strength of construction has been adjusted downward in recognition of the fact that most houses do not need to last for centuries. Builders have also learned that adaptation of design, to make possible the use of lumber of standard dimensions and equipment of standard make, prevents costs from rising to a level which would prevent the introduction of many features of greater importance. In contrast with the automobile industry and some of the other manufacturing industries, however, the building industry has made comparatively slight progress in the way of developing methods of construction which would be genuinely low-cost, and at the same time render a maximum of service. Such gains as have been made come mainly because of developments in certain manufacturing industries which supply mate-

rials or equipment for building. Much remains to be done in this field.

Without attempting to forecast in detail what further price progress may be expected from the approach which we have been discussing in this chapter, there seems every reason to believe that the gains in the future will exceed those in the past. In part this is because consumers' taste is constantly becoming less fixed and more ready to accept something that, though not customary, is better (or at least sufficiently good). In part it is because science is rapidly increasing the variety and diversifying the character of the materials out of which goods may be constructed. In part it is because both technical men and industrial leaders are coming to realize how much can be accomplished by first finding out just what it is in a process or about a product which makes it effective—and what, on the other hand, is harmful or unnecessary—and then concentrating directly on what will produce the desired result. The practical business man who makes low price the keystone of his policy usually owes most of his success to his ability to plan both his product and his processes in such a way that cost will be minimized.

CHAPTER IV

LARGE-SCALE PRODUCTION IN RELATION TO COST

In Chapter III we considered certain technological factors—related chiefly to questions of design and materials—which have a definite bearing on the cost of producing serviceable goods for the consumer or on the problem of giving him the most for his dollar. We turn now to a somewhat parallel question, namely, the structure or organization of business as it affects efficiency and costs of production. In particular, we wish to consider the way in which many of our most efficient modern techniques have been developed under a large-scale specialized type of business organization commonly referred to as mass production. To a degree this specialization appears to require large corporate units of operation or control. But we shall examine also the possibilities of attaining the highest degree of efficiency and the lowest unit costs in relatively small concerns which make a single type of article or a limited range of related articles. If society is to achieve the maximum of economic progress, it must develop that type of business organization, whatever its form may prove to be, which will make possible and indeed foster the fullest use of improved techniques.

With the progress of the Industrial Revolution, particularly after flexible and economical means of transporting goods were devised, a tendency appeared for small business concerns to be superseded by those of larger size—mergers, consolidations, trusts, giant corporations, integrated either horizontally or vertically or

both. Much has been written since the great combination movement in the United States about 1900¹ on the advantages of large-scale production. Likewise, much has been said concerning the exaggerated notion of such advantages which had been entertained, or at least the misconceptions as to the types of organization which would most surely and fully attain the economies of large-scale operation.

In the nature of the case, no simple, universally valid answer can be given as to the extent to which expansion in the scale of operations will lower costs, even in a given industry. For large-scale operations, at most, permit management to obtain (according to its energy and skill), rather than automatically compel, reductions in cost. Furthermore, economies in operation which are at first open only to large operators are in many instances later available to smaller operators. This is made possible through the more general availability today of improved machinery or of knowledge as to how low-cost operations can be performed. Often the very ability of these smaller concerns to specialize for efficient operation depends on their occupying certain interstitial spaces in a system which also has very large corporations.

The distinctive contribution of efficiency in manufacture that is made by large-scale operation grows chiefly out of the opportunity it creates for mobilizing resources large enough to develop fully the potentialities of science and engineering, of personnel, and of the market. Obviously, these three factors in industrial development are not mutually exclusive but are functionally interrelated and overlap in various ways.

¹ For discussion of the course and magnitude of "big business" development, see pp. 157 ff., 214 ff.

CONCENTRATION FOR SUPERLATIVE EQUIPMENT
AND TECHNIQUE

It is natural to think of the need for highly specialized and sometimes very large units of mechanical equipment as being the first reason why, under modern conditions, efficiency and hence economy of operation call for large-scale production. Notable cases in point are furnished by the chemical and metallurgical industries, whose techniques necessitate most elaborate and costly plant installations. Let us take for illustration the case of steel stampings.

If one proposes to make from metal only a few pieces of a given kind, the cheapest process, under many circumstances, is casting. For casting, in its essence, consists of the rudimentary process of making a hole in sand, and of pouring in molten metal. But if many thousand units of one kind are to be fabricated, and the purpose in view can be served by a form which can be obtained by stamping (and it is marvelous what intricate shapes, and what massive objects, can be stamped), then it is much cheaper to put the necessary preliminary labor and expense into making a die, after which the part may be simply stamped (often automatically) out of sheet metal.

In some industries, such as that of making plumbing fixtures (bathtubs, etc.) there is considerable doubt as to the suitability of stamping; for enameled wear which has been subjected to too violent stresses in stamping tends to chip. Here a recent development has been the introduction of permanent molds, forms which are expensive to make but, once made, eliminate the necessity of making a new mold in sand for every article cast.

The immense strides made since the war in stamping, molding, and forging (the shaping under a drop-ham-

mer of heavy parts which require strength), and in the development of other apparatus for the quick and economical duplication of parts, is one of the principal reasons why it has been possible to sell at ever-decreasing prices such beautiful and efficient products as the modern automobile, improved gas and electric stoves and refrigerators, and many other articles which have come into common use. Generally speaking, however, such auxiliary apparatus requires great initial expense—particularly the making of dies. In the automobile industry, the annual expense incurred by each manufacturer for dies, jigs, and fixtures used in shaping the bodies of his cars is said to run from around 2.5 million to 6 million dollars. If an automobile manufacturer sells less than 200,000 cars annually, the expense on body dies which he must charge against each unit produced puts him under an appreciable handicap. On the other hand, a distinct advantage is enjoyed by a company like General Motors, which, even as respects its medium-priced cars, capitalizes on quantity by using the same dies for the body shells of Pontiac, Oldsmobile, La Salle, light Buick, and small Cadillac. General Motors has duplicate instead of single dies for important parts for shaping the bodies of the cars listed above, but still has a large volume of units over which to distribute its die cost.

In many other lines of manufacture, in which the product is wholly or in part fabricated of metal, the die expense for an establishment of only moderate size will run into many thousands, or hundred thousands of dollars. This may make production very cheap, but only if there is large volume. Indeed, it is impossible to name any point beyond which further increases in output could not be used to decrease die cost, for where many dies are used, the manufacture and conservation of the dies them-

selves, the re-use of die parts, and the economical making of die drawings, present a new and strategically highly important field in which volume of activity makes possible a skill and economy which the producer who continues to operate on a small scale can hardly hope to duplicate.

The point made with reference to dies is more or less true of all other special machinery and equipment. It is large volume of production which permits the designing of super-machines which would not be justified at lower production levels. In going through plants which serve a considerable proportion of the total national demand for their product, it is not uncommon for a guide to point to some end of a room and say, "There's half a million dollars' worth of machinery there"—special machinery for the making of some particular part to go into a larger product. The number of operations one machine will perform simultaneously, and the exactness, intricacy, and sometimes great power required by the job are enough to make one pause. Sometimes these machines are in batteries; and, theoretically, at least, each of several manufacturers, no one of whom was responsible for more than a fraction of the total national output along the given line, could have one. But the more perfect and elaborate the machine, and the faster it works, the greater is the chance that only the very large producer can develop and use it to the best advantage. Furthermore, it is simpler to develop, construct, and handle a battery of machines where a number of similar units are required, than to have the same amount of machine development and operation carried on on a small scale in scattered places.

On the other hand, it is in many instances possible, within the broad limits of a single industry, for a given

concern so to narrow the type of work which it undertakes or to concentrate on so few products, that a comparatively small firm can achieve the highest degree of technical efficiency. Paper-making companies as a rule are large concerns. This is partly because one organization not only owns the paper-making machines but also manufactures the pulp which constitutes their raw material and owns the timber land from which the pulpwood is cut and the hydroelectric plants which furnish power.³ However, many of the companies which stand first in their particular field are well under what might be termed giant size because the industry as a whole breaks down into certain major divisions—newsprint, paper boards, book paper, wrapping paper, writing paper, tissue, building paper, and others. Though it is not uncommon for a paper mill to be shifted from one of these divisions into another, at a given time most of the companies are engaged principally in making only one general class of paper, and indeed concentrate their activities on special products within a given class.

An illustration of what can be accomplished through intense specialization by a relatively small concern is to be found in the experience of the Scott Paper Company. In its earlier years this firm had bought large rolls of paper from others and converted them into package and roll toilet tissue. As a converter the company had been selling more than 2,000 brands, but since acquiring a mill in 1910 and beginning its own manufacturing operations, it has followed a policy of standardization. Today the company produces only toilet

³ Prior to the segregation of its power holdings in 1934, the International Paper and Power Company claimed assets of close to 800 million dollars; and even now, with the items on its balance sheet practically restricted to properties of direct use in paper making, the company's assets are upwards of 250 million dollars.

tissues and tissue towels under two distinctive brand names. The lower-priced toilet tissue is the older brand but has been continually improved in quality. The higher priced brand contains a higher percentage of the more expensive raw material and is offered in a larger package.

During the last eighteen years the company has devoted practically its whole energy to the perfection and distribution of this exceedingly narrow range of products. It has laid emphasis first on developing products which maintain the highest standards of quality, second on intensive selling, supported by a continuous national advertising program, and third on lowering prices even more rapidly than the paper industry as a whole. As a result this company increased its dollar sales nineteen-fold between 1910 and 1937, winning for the two brands upon which it has standardized a substantial portion of the whole domestic market.

Owing to the great volume of sales which it has built up for its highly specialized brands, the company has been able to attain an unusual utilization of plant. As an example, it has kept one of its machines manufacturing the same kind of paper continuously from 1922 to date. Other machines have operated continuously on the same brand for several years. The plant is run twenty-four hours a day and each year since 1933 it has been necessary to operate some Sundays in order to keep up with demand. Labor works on various shifts staggered to make an approximate 40-hour week. The average hourly earnings of the mill employees have increased approximately one-third during the past five years. Some of this increase came from wage incentives used as rewards in attaining greater production efficiency and finer quality.

Until recently a large percentage of its pulp has been purchased; this helps to explain why, as late as 1936, it was possible to carry on a business of this size with total assets of less than 8 million dollars. For some time the company for the purpose of developing an improved quality of raw material and providing a "yardstick" of costs has had a small experimental plant in Nova Scotia engaged in the manufacture of mechanical fiber. Technological developments in the manufacture of domestic sulphate pulp caused a somewhat wider departure from the policy of purchasing pulp, and, consequently, brought about a considerable increase (by approximately 50 per cent) in the company's total assets employed in 1937. These developments have made it possible to utilize bleached sulphate pulp which can be produced in our own southern states under conditions as favorable as in any part of the world.⁸ Formerly it was necessary to import the greater portion of its chemical pulp from the Scandinavian countries, where certain pulp manufacturers were willing to meet the special quality and other requirements of this firm. Recently there has been a promising development in this direction by certain domestic mills.

In 1937 the Scott Paper Company and another paper manufacturer undertook jointly the construction of a bleached sulphate mill in Brunswick, Georgia, to produce for each a portion of its raw material requirements. The company plans, however, to continue the purchase

⁸ The development of an American source of supply was desirable because it embodied the ultimate promise of lower costs and fiber characteristics peculiarly useful to their needs, as well as a means of lessening dependence on distant sources of supply. At the same time the production of pulp from relatively quick-growing southern pine should mean an important source of revenue for this agriculturally depressed region.

of a substantial part of its pulp needs. If the new chemical pulp plant is as successful in its "yardstick" rôle as was the pilot mechanical pulp plant in Nova Scotia, the company will be able to keep its investment in raw material products low and retain to a great extent its now specialized character.

This company's hold on the trade is not based on any control of raw materials or patented processes, but rather on the establishment of a consumer preference for high quality products which, by means of its high efficiency, it can furnish at reasonable prices.

The product which we have been citing goes directly from the producer to the jobber, retailer, or large consumer. Even in cases where the industrial process is much more complicated and the product involved is a producers' good or one of the numerous "parts" which goes into the assembled product, such as an automobile or a washing machine, modern industrial organization is, however, working out along lines which permit of similar specialization by small subsidiary concerns or entirely independent companies. In recent years, there has been a great development of large-scale production through specialized plants which make standardized parts or accessories for some very large manufacturer, for several of not so great size, or for many relatively small producers. In their single product or small range of products, they may attain a greater degree of specialization than could even the very large manufacturer of complex or numerous articles.

Among factories of the latter type, even those that are the largest in their industry, there are comparatively few where the equipment operates continuously on a single item throughout a season. Sometimes a plant will produce hundreds of different models or types of prod-

ucts. In many cases there are numerous sizes, styles, etc. Even where there is only one, or a few products, the fabrication of some part is likely to occupy a given machine only a fraction of the time and it becomes necessary more or less frequently to make adjustments for the production of something else. Now, it often happens that getting ready to perform a given job accounts for a large part of the labor involved in the completed process. When, therefore, the system of industrial organization puts the production of each part on such a large-scale basis as to provide steady operation, maximum efficiency of both equipment and personnel is facilitated. It is possible, of course, that this result may be achieved internally by a very large plant even though it makes a variety of products. But there has also been a notable tendency to get the same result—continuous operation—by decentralization, and this has been a counter influence against the tendency toward extreme centralization which has been feared by many.

An illustration of the tendency towards specialized small plants is afforded in the manufacture of electric motors. Between 1925 and 1936, the wholesale price of quarter-horsepower motors, a type commonly used on equipment such as washing machines, was reduced from approximately \$15 to approximately \$5. This great price reduction is said to have been made possible chiefly by savings in cost which grew out of manufacture in greater quantity and by improved methods. While the whole industry has advanced (those who did not advance having dropped out of the picture), the development of great-volume, low-cost production has been carried the farthest by a small subsidiary of one of the large automobile manufacturers. In other parts of the electric motor industry, each plant makes various types of mo-

tors, and the volume of identical units is thereby limited. This particular establishment, however, specializes in one-sixth, one-fourth, and one-third horsepower motors; and to the extent that it is possible, motors of these three sizes are made of identical elements. Thus all laminations, those thin sheets which are assembled to make the body of armature and stator, are identical for all three sizes; and the punch press which stamps them out runs without alteration a month at a time, instead of being subject to daily adjustment as would usually be necessary in other plants. So the whole plant is organized, as nearly as possible, like a great machine—a machine for making a machine; and there flow from one small building more fractional horsepower motors than are produced in any other single place in the United States. The market for these motors extends far beyond the parent motor company and includes hundreds of thousands bought annually by other firms to be incorporated in their products.

It is not our purpose to deduce any absolute principles covering the extent to which or the directions in which the economies of large-scale operation may be most economically secured through centralization or how they may be attained through decentralization. We wish merely to emphasize the fact that the attainment of the resultant economy is of great importance for society. To find ways in which such economy may be brought about is a problem which challenges the best managerial talent in our various companies today.

The different strategies which are used to attain this end under differing circumstances are well illustrated in the experience of an industrialist who may be taken as a master of the tactical problems involved—Mr. Walter P. Chrysler. When he was with the General Motors

Corporation, he fought to prevent Buick from building a frame plant, on the ground that they could not run such an enterprise as efficiently as specialists in that line. On the other hand massing the orders for all General Motors cars on one frame-making concern would, he argued, enable that company to attain maximum economy, of which General Motors as a mass buyer would be the beneficiary.⁴ But when he was trying to thrust the Chrysler car forward among the pace-makers in its field, he strained credit and ingenuity to acquire the Dodge plant so that his company would have foundry and forge shop facilities of its own⁵ and thereby lower the cost of production and in turn the price of its automobiles.

It is not merely the technical requirements of particular machines or even of separate shops or departments that dictate concentration of production in large establishments. It is rather the system of mechanized production which must be operated as a whole. A striking case is the development of straight-line assembly and the straight-

⁴ "It would take two years to build a frame plant. Sure, it will be almost entirely automatic; but it will take three years to learn to run it. We can't recruit that kind of talent overnight. Mechanics of the kind required are not to be found around here. It will cost more in five years than we would pay for frames in ten years. We can go out right now and buy frames for General Motors for every car division, at a price that will save a million and a half a year.' . . . Then I sent for the head of the firm that was making our Buick frames and offered him a fabulous order, subject to a satisfactory price. We made a contract, which was approved, whereby his company was to supply frames for all makes of General Motors cars for a term of five years at a scale of prices sliding downward as quantities increased. As a result of that pooled buying, the corporation in the next year saved \$1,750,000 in comparison with the various prices we had paid for frames the year before. When the five-year term expired I understand that contract was renewed for five years more." Walter P. Chrysler, "Life of an American Workman," in collaboration with Boyden Sparkes, *Saturday Evening Post*, Aug. 7, 1937, pp. 59-60.

⁵ "Each time we expanded our activities so as to make some part we had previously been buying from an outside manufacturer, we had been able to lower prices. . . . But we were still forced to buy too many parts outside. . . . We were then compelled to buy all of our cast-iron parts

line production which may go with it. Possibly inspired by the great meat-packing plants where carcasses moved on overhead carriers from work station to work station through a progressive *disassembly* operation, the principle of straight-line assembly was adopted on a large scale in the making of automobiles, and units going into automobiles. The early success of Ford and General Motors with this method was phenomenal, and it is now practically universal in automobile manufacture. But other industries have introduced the practice in the manufacture of stoves, furniture, and numerous other articles.

The principle of straight-line assembly and production is capable of almost unlimited elaboration. As the organization of a shop advances in intricacy and efficiency, the tendency is for straight-line production not only to be pushed farther back, but to be developed collaterally. Thus, for main lines of assembly there are sub-lines which deliver some sub-assembly. And back of

because we had no foundries. Dodge had a big foundry. We were paying out vast sums for forged parts, too, because we had no forge shop. Dodge had a big forge shop; Dodge had many plants filled with things for lack of which our products were costing more than was necessary. Moreover, without the better control of costs such as we could achieve with bigger plants, there was no hope of dipping into that greatest of automobile markets, the one in which Henry Ford's only real rival was the Chevrolet. We had done plenty of figuring, and knew that to exercise our full manufacturing power and talents we would have to acquire plants that would cost, if we had to build them, about \$75,000,000. [Accordingly the Dodge property was acquired for \$170,000,000 in new Chrysler stock and the assumption of Dodge debentures.]

"Downtown, in New York, in 1928, the consensus was: Chrysler's bought a lemon. That was the opinion of some minds that contained little understanding of industry, and especially of the automobile industry. Buying the Dodge was one of the soundest acts of my life. I say sincerely that nothing we have done for the organization compares with that transaction. We had, before the merger, an intensely sharp spearhead in the Chrysler Corporation, but when we put behind it all of Dodge our spearhead had a weighty shaft and had become a potent thing." The same, Aug. 14, 1937, pp. 76-77.

the assembly operations, there is developed a more or less continuous flow of parts in process. In his manufacture of millions of Model T's, Ford, with his extensive use of automatic carriers for parts going from operation to operation, was really extending his straight flow of work substantially throughout the length and breadth of his plant.

Straight-line assembly and production brings also enormous savings in the inventory which must be carried, in the space and labor required for store rooms, in trucking and routing work, and in the handling of parts and finished or partly finished products. It also facilitates a very fine subdivision of labor. But to utilize the method effectively, the highest degree of coordination in the working of all the elements in the system must be assured. Otherwise, a breakdown here or there will paralyze the operation of the whole. Equipment, plant, layout, and managerial organization are correlative factors in efficient industrial functioning. It takes the most careful planning and an extended period of development before perfection in the flow of operations can be obtained. And this supreme triumph of efficient production is possible only where production is both large and continuous over a considerable period. In the manufacture of automobiles, several weeks are required to attain maximum efficiency of production, even with old employees, after a change of model has been made.

Finally, developing and maintaining the efficiency of the structure and function which we have been discussing involves a continuous process of experimental work designed to produce better operative techniques and to improve the quality of existing products or to develop others of an entirely novel kind. Such research work involves laboratories and physical equipment in the way

of demonstration plants or machines and staffs which often run into the upper salary brackets. In view of the time over which such experiments must be continued before they produce commercial results, the expense is generally too high to be borne by any except a large company.* Since the emphasis here is so largely on the quality of the persons who carry on the work, and this in turn on the way in which a given concern is staffed, we shall turn our attention now from techniques and

* "Forward planning and the assuming of financial risks are parts of the every-day job of industrial management. The course is not fixed or rigid, but must be continually charted ahead. New and improved facilities must be provided, and new methods and new products developed to combat obsolescence, to provide growth, and to take up the slack of industrial unemployment. . . . With respect to development and expansion in industry, the necessity for long-time planning and for boldness in the taking of risks is of crucial importance. Two outstanding examples from your company's own comparatively recent experience may help to make this clear.

"For the manufacture of du Pont dyestuffs, more than \$22,000,000 had been invested, over a period of six years, before a dollar of annual net profit was earned; and more than \$21,000,000 of additional investment was made in this business over a further period of twelve years before sufficient profits were earned to offset the accumulated previous losses. In your company's development of the manufacture of synthetic ammonia, and related chemicals, more than \$27,000,000 was invested, by gradual additions over a period of ten years, before the cumulative yearly net operating results showed a dollar of profit. Both of these newly developed industries are now distinct national assets; both are contributing regularly to your company's annual earnings; and the two together now provide employment for a total of about eight thousand workers." E. I. du Pont de Nemours and Company, *Annual Report 1937*, pp. 24-25.

"It takes many years—seven is a good average—to bring an idea for a major development from the laboratory through pilot plant to an initial manufacturing profit. If a good project is abandoned by one sponsor because of some temporary conditions which cause hesitation, it is apt to find another more venturesome one, and the effort spent by the first is lost. The assembly of a good research organization is a task of years of careful selection and training and we believe economies attempted now would be a source of later regret. Hence, we hope to be able to continue our research at about our 1937 tempo in the belief that with the return of better business—when it comes—justification will be found." Monsanto Chemical Company, *Annual Report 1937*, p. 12.

equipment to the related questions of personnel and the personnel groupings necessary for maximum efficiency in industry.

CONCENTRATION AND ATTAINING MAXIMUM
EFFICIENCY OF PERSONNEL

The second way in which large-scale organization, wisely applied and properly limited, promotes high efficiency and low unit costs is through the further extension of the division of labor so shrewdly perceived by Adam Smith in the early days of our industrial development. It goes, however, beyond anything which he foresaw. Executive talent and technological and scientific genius are very narrowly distributed but can be made effective over a wide industrial area if brought into sharp focus at the top of a very large concern. The functions of planning by the executive staff and research by scientific and engineering staffs of the highest degree of competence, equipped with extensive laboratories and research facilities, constitutes one of the most distinctive factors in the efficiency of many of our modern industrial concerns.

The skill of those in charge of a company in perfecting its products, cultivating markets, handling purchasing, improving processes, and in the many other phases of internal and external management, has often been the real explanation of why one company grew to a size which, from the standpoint of the equipment and processes taken by themselves, offered no material advantage over a lesser size. In any line of human activity there are men who tower above others in their ability to do a certain kind of thing effectively. Even today, when the door of opportunity is open to so large a portion of the population, and when our technical schools are turning out trained men by the thousands, there is always a

shortage of those men who, in any given industry and phase of that industry's management, are competent to discharge the responsibilities which rest upon them with maximum effectiveness. It is in no small measure because of the large-scale production which can attract and give scope to unique talent that such producers can be pace-makers in economic progress.

Over a wide range of industry, the lowest costs, quality of product considered, are attained by those companies which assume large overhead expenses in the interest of maintaining a competent technical and managerial staff. If research and testing laboratories, merchandising experts of high caliber, and all the other apparatus, material and human, for developing low-cost production of the things people want are to build profit rather than be a drag, it is essential that output be large. The \$10,000 which a leading mail order house, in each of two succeeding years, paid to a celebrated artist for designing the external appearance of its refrigerators is typical of an important class of expenses which, once met, are off the slate. With a sale of 10,000 units, this item of expense would amount to \$1 per unit; for 100,000 refrigerators annually, it would be 10 cents; and for 1,000,000, it would be 1 cent.

Furthermore, economy and efficiency in the use of such specialized personnel comes not only from the application of the skills of individuals but also from the elaboration of a group organization combining many special proficiencies complementary to—and stimulating to—one another. This point has been so clearly and indeed inspiringly pointed out from the viewpoint of the practical business man that we cannot do better than quote:

In the development of the great modern business corpora-

tions as servants of mankind, men have devised a creative force that transcends themselves. None of these corporations are perfect yet, of course; but before you condemn their crudities remember how young they are and then ask yourself what other time in history can show anything to compare with these teams of men, in capacity to enrich mankind, in capacity to extend human powers in almost any direction we may wish to go. . .

From the beginning of the automobile business high costs have been a challenge; that is the reason men do not have to be rich to possess an automobile. Few Americans are so poor that they may not hope to own a car. Yet this is true only because the industry has struggled to be able to sell its wares cheaper and cheaper even as the cars became better and better. Their steady improvement, of course, has been the fruit of inventive minds like that of Kettering. . . . Kettering has become a great scientist; then he was an inventor, and we wanted him because of his visions, because through him there probably would be revealed greater tasks for the force we represented. . .

Nourished by such a mind as that of Kettering of General Motors or Fred Zeder of the Chrysler Corporation, a great corporation's departmentalized intelligence becomes still greater; but to support a Kettering there must be other kinds of minds, those of production men, of merchants, of mechanics, of advertising men and countless others. When all these minds, through organization, are made to function as a single intelligence, each member of which is a special, gifted part, why, then you can expect to produce magic. Nowhere in the world is there a people with wealth so widespread as in America; nowhere is there a people who have so much. It seems to me quite obvious that we do not owe this difference to a few outstanding men, we owe it to a scheme of working whereby a lot of varied intelligences in a great business organization pool their most effective parts.⁷

CONCENTRATION AND SIZE OF THE MARKET

Third among the major factors contributing to the efficiency of large-scale industrial organization are those which grow out of marketing considerations. We have

⁷ Chrysler, *Saturday Evening Post*, Aug. 7, 1937, pp. 20-21.

already referred to the fact that Adam Smith, in the early days of the Industrial Revolution, pointed out the possibilities of increasing efficiency of production by further and further division of labor—one of the outstanding ways in which the simple factory system of that day differed from the handicraft system which had preceded. He recognized, however, that the extent to which this division of labor could be pushed depended on the ability of managers of business organizations to enlarge the bounds of the market in which they sell their specialized product. The development of a market extensively to embrace potential users everywhere in the world and intensively to reach every nook and cranny of the home market by easy financing, systematic propaganda, even change of tastes or habits, requires large outlays. The unit cost of such development can be kept to reasonable proportions only if the volume of output is very large. Heavy expense must often be incurred a long time before results can be reaped.

This effort to enlarge the boundaries of the market and at the same time so far as possible concentrate the flow of goods into certain broad channels in the interest of economy and efficiency constitutes an important phase of the integration movement in industry. Two types of industrial integration are commonly recognized—vertical and horizontal.⁸

⁸ An interesting case of vertical integration, with emphasis on marketing organization as well as technological efficiency, is afforded by the Kendall Company. Beginning in 1903 with a small plant employing 75 people, it has now become an integrated company embracing 17 units and employing some 6,000 people. Though highly specialized, it is neither a monopoly nor an industrial giant.

"The cotton cloth produced in a Kendall cotton mill, instead of being sold on the open market, passes to other plants within the company for the further processings necessary to convert it into products ready for use. . . . By the 'Single Purpose' plan each cotton mill is devoted, after

In the process of vertical integration, large industrial organizations are built up by the combination of successive stages in the process from raw material to finished product. It may not merely cover integration of a series of manufacturing processes, but also include distribution of the finished product. Whatever the technical advantages of such a linking of successive stages of an industrial process, already discussed, it is obvious that it tends also to economize on costs of advertising, salesmanship, transportation, storage, financing, and the like. Instead of the producer of raw materials or partly finished products having to conduct his business on a speculative basis and then go to large expense in finding a

meticulous preparation, to the production of a definite kind and type of cloth; and each mill, once organized for this single-purpose production, continues to produce the same kind and type, thus effecting economy of operation. The cloth in our mills is designed for specific uses, determined in advance of its production, and after the market has been prepared for its absorption. This prevents the waste incurred by inadequate recognition of the interdependence of production and consumption.

"[About ten years ago] Bauer and Black, 40-year-old manufacturer of surgical dressings and allied products sold through retail drug-stores, was acquired to broaden the consumer base through new outlets . . . and the Bike Web Manufacturing Company was acquired [because] its widely known . . . elastic webbing products supplemented Bauer and Black's products in this field and its leadership in the sporting goods trades [further] broadened the distribution base. . . .

"Our products are diversified but there is also relationship. This may come through the fact that products incorporate cloth made in one of our cotton mills as a principal raw material. For example, infants' diapers, crinolines for various purposes, curtains, bookbinders' cloth, gauze for sanitary napkins and linings for coats, shirts, and collars have no similarity in use, yet they all have a relationship through the Kendall-produced cloth which is their common raw material. Surgical gauze, surgical sutures and ligatures, and orthopedic plaster-of-paris casts are not related primarily through raw material, but their kinship in a common distribution is logical since all are used in hospitals. Similarly, products may fit together because they reach the public through the drug-store, as in such diversified products as Bauer and Black's foot products, first aid materials, and . . . heat pads." *Kendall* [a brochure published by the company], pp. 2-3, 5, 12-13.

market for these goods, he can organize the whole process with the greatest definiteness and economy to supply a particular market. The size and location of his plant, the range and specification of products produced, the rate at which they are manufactured, the volume of stocks carried, and the process of transporting them to the plant where they will be further processed or assembled can all be coordinated to the adjacent parts of the process with the utmost economy. Instead of producing a variety of designs and sizes, the product can be specialized with maximum economy upon continuous machine runs of a limited range of articles designed precisely to the requirements of the user, known in advance.

This type of situation has already been examined from its technological side in our discussion of relatively small specialized plants attaining high productive efficiency as exclusive suppliers of large manufacturers, assemblers, mail order houses, chain stores, and the like. If the specialty plant is a subsidiary of the larger corporation, this is vertical integration in the ordinary sense. But even if it is an independent organization, contracting its supply to the large manufacturer or distributor, the same sort of coordination is effected and possibly a greater degree of administrative independence retained. On the other hand, this separateness may deprive it of some of the advantages of integration, such as financing by the parent company. However, it frequently happens that one feature of the contract under which a specialty plant devotes its whole capacity to supplying a given user may be that the larger concern will furnish working capital or even finance plant changes or additions. Or it may happen that the mere evidence that the small company has such a contract to supply a well-established concern may en-

able it to secure its own financing on favorable terms from local sources.

Turning now to horizontal integration, we note the growth of large concerns by the process of adding more and more units engaged on a single stage of the industrial process, such as refining in the oil business; the manufacture of matches, tin cans, or agricultural implements; milk distribution; or the baking industry. In a general way, it may be said that such horizontal integration for the purpose of securing monopoly control within a particular line of business was strongly emphasized in the earlier promotional period of big business development and that vertical integration for the purpose of skilful coordination on a series of processes is more characteristic of today's large-scale business organization. However, both types of integration must be skilfully interwoven to get maximum efficiency and economy. As an example, the typical automobile concern, besides such vertical integration as it finds expedient, will also integrate horizontally in order to have a "full line" of cars from high price to low price (and perhaps trucks as well) with which to meet and systematically cultivate the whole range of market opportunities.

Any far-flung effort at sales promotion, foreign or domestic, involves a heavy selling expense per unit if the organization is developed for disposing of a single article or narrow range of items. On the other hand, the attempt to build up a diversified line for the sake of economy in sales promotion tends to defeat the drive to secure maximum economy through intensive specialization and large-scale production of particular items. Hence, degree of specialization, range of articles pro-

duced, and nature of selling arrangements constitute three closely interrelated parts of the basic problem of industrial efficiency or cost to the ultimate user.

If a modern industrial concern is to cover not merely the whole domestic market but important foreign markets as well with a sales organization which does not impose impossible unit costs, it must ordinarily be selling more than a single article or type of articles. Thus we find today not separate organizations for typewriters, billing machines, comptometers, and filing devices, but International Business Machines Corporation and Remington Rand. Similarly, we find coffee, yeast, gelatin, cereals, and like commodities integrating their organization into Standard Brands and General Foods. Such horizontally integrated companies have been built up to coordinate a distributive service which can most economically and efficiently reach all markets, avoid duplication of service, make individual peak loads compensate each other, and approach capacity utilization of personnel and plant facilities.

But important as is expansion of the bounds of a market in order to promote specialization, the very effort to cultivate all the demand in a market, once one has gone to the expense of entering it, creates a danger of diversification which will defeat the very purpose for which wide-scale marketing was at the start undertaken. The zeal to reach additional consumers may result in introducing a diversity of sizes or designs of products which will ultimately break down the economy of standardization, which is one of the basic factors of large-scale production. This applies particularly to attempts to develop a foreign market. On the other hand, it must be borne in mind that the aggressive but intelligent development of international markets by some companies has itself

been instrumental in promoting a degree of standardization and extreme specialization which have been pronounced factors in low cost of production. Such a development was early demonstrated by the British cutlery industry, later by German optical goods and surgical instruments, and more recently by American office appliances, agricultural implements, and automobiles.

This analysis of the market aspect of the industrial problem emphasizes again the complementary relationship between large and small units in the modern industrial structure. The relatively small company can often achieve genuine large-scale production with all its economies by leaving the whole problem of market development for finished products to such giant corporations as may be called for at certain strategic spots in the industrial organization, while it specializes in the manufacture of a single accessory or part which may be produced under contract for a single large user. There are many such plants which do nothing but custom or contract work for large users of semi-finished products or "parts" which may then be assembled in the purchaser's own finished product. Thus, large-scale production, whose economies we are analyzing, is by no means synonymous with the giant industrial concern. A large company with a host of employees would be engaged in essentially small-scale operation, if it carried on many unrelated activities, in each of which it was but a small factor in the market. On the other hand, a very small company which supplies the whole of the market for some simple product may be engaged in mass production on the widest possible scale.

The automobile parts industry, which was discussed earlier in its technological aspects, is a good illustration of the association of large-scale production with small

decentralized operating units. There are in this industry many companies which have less than 100 employees. But when such a company takes a contract to supply all or a great part of the needs of one large automobile maker, or of all makers, for some unit that goes into a car, it may be able to gain within this limited field the advantages of mass production to an even greater degree than would be possible if one or all of the great automobile companies were to expand their organizations so as to make all their own parts. All these automobile parts companies, large and small, are part and parcel of the large-volume, low-price system which characterizes the automobile industry. That is, the low price of the finished product has made possible the production of automobiles by the million, and these millions of cars have in turn required millions of parts, which are produced in large volume at low cost by some thousands of specialized manufacturers.

In a word, then, mass production demands mass marketing. To protect the economies of large-scale specialization, it is important that the size of the producer's market shall not be narrowed by the preservation or development of fictitious differences or variations in design or material whose worth is less than proportionate to the added cost involved in producing them.⁹ Economies gained in mass production may be protected by combining the selling for many specialized producers in one coordinated distributive organization, covering a very wide market, or by exclusive contracts which tie specialized producers to one or a small number of large users.

⁹ The "simplification" program among manufacturers promoted by Herbert Hoover as Secretary of Commerce was aimed to provide remedies against this abuse. So too, in part, is the "standard containers" work of the Department of Agriculture.

We should not conclude this part of our analysis without pointing out that the cost-lowering influence of large-scale production is felt over a considerably wider area than is included within the walls of the plant which is first and most directly affected. For when a manufacturer purchases in large quantities, and especially when he can give advance assurance to a supplier with respect to what volume will be taken and at what time, it becomes possible for the supplier also to plan his production on the most economical basis. No small part of the lower costs of production in quantity is due, therefore, to the fact that it thus becomes possible to organize the supply of materials and partly finished products on a basis of coordinated efficiency. Vertical integration of many steps in the industrial process, as was pointed out earlier, may be effected either through voluntary affiliations or through contract relationships entirely outside the corporate structure of the big company itself.

This makes for elimination of a large amount of costly and fumbling merchandising services at each of the steps by which a wide variety of raw materials are assembled and put through various processing and preliminary fabrication stages, until they are finally marketed as a complicated finished product. Instead of seeing producers sending products out blindly in search of an industrial market, we find the large-scale fabricator of goods which go directly to the consumer establishing for himself permanent lines of supply from which he can buy just what he needs in large quantities upon strict specifications or even contract with whole specialized plants to produce the specific articles that he needs. This results in a minimum of lost motion in the merchandising part of our economic system—a part whose growing complexities often threaten to absorb the gains we make

through improvement in manufacturing techniques.

The large-scale purveyor of consumers' goods may be a manufacturer, as in the case of automobile companies. Or, as in the case of mail order houses, it may be a concern which sometimes manufactures but, more frequently, merchandises articles produced by others. Lastly, it may be a concern which is almost exclusively a merchandiser, as in the case of many chain stores. Whatever its type, such a concern functions, in effect, as the purchasing agent for a great body of consumers. There is a strong tendency not merely to achieve technological gains but also to pass them on to consumers. The company's success must depend on its ability to satisfy wants at prices within the buyer's reach. To do this it must not only increase efficiency and eliminate waste at every step, beginning with its own operations and reaching back to the original supplier of raw materials, but also pass these benefits on in large measure to those for whom it acts as purchasing agent. This thrusts consumer welfare to the forefront of the business picture in ways which approximate the ideal set up under the Utopian schemes of consumer cooperation or "the cooperative commonwealth."

CHAPTER V

CAPACITY OPERATION, UNIT COST, AND THE STRUCTURE OF PRICES

Chapter IV has shown that high productive efficiency demands the use of the most powerful and specialized machines and batteries of machines, the most able and highly specialized workers and teams of workers, with business organizations of a size large enough to utilize and organize these special capacities—technological, commercial, executive, and financial. There is, however, another requirement for efficient and low-cost operation which has so far been only tacitly covered, and that is that the concerns around which industry is organized should at all times maintain their operations approximately at capacity. Only so can they realize their potentialities for satisfying consumers' wants most fully and cheaply.

It now becomes our task to look more closely into this phase of the problem. Do our industries in fact reasonably approximate capacity operation? If not, what has this to do with the price-making process and questions of price policy? It is hardly too much to say that price policy has almost everything to do with the full functioning of our economic system; that it is, in fact, on the astute and skilful setting of prices, computation of costs, estimation of earnings, and capitalization of the earnings rate into productive outlay that the health, activity, and growth of our modern business system primarily depend. In other words, it is—under democratic institutions—only through the adjustment and readjustment of prices (with the ultimate consumer always in the forefront of consideration) that society can pro-

mote full and continuous utilization of its productive capacities.

GENERAL AND SPECIFIC NON-USE OF CAPACITY

In *America's Capacity to Produce*, it was pointed out that even in relatively prosperous times partial idleness of plant and partial unemployment of the labor force are chronic, even while wants and indeed needs of the general public remain in substantial degree unsatisfied. As a total, it was estimated that this slack amounted to something like 20 per cent of our "practically attainable" productive capacity in 1929. Obviously, it would differ from plant to plant according to the skill or luck of the management and from one industry to another, depending on whether it happened to be in a line of production which was in a vigorous state of expansion as was so long true of rayon yarn, or in a declining industry like wagon building.

These partly idle plants were erected and this partly idle machinery installed in the expectation, or at least the hope, that all of them could be fully employed according to prevailing standards of work hours and within the known limits of seasonality. Likewise, a large amount of this unemployed or partially employed labor was willing or even anxious to work more, so that it might enlarge its income. These two lines of desire are mutually harmonious. Failure to realize them simply means that our people as a whole were not so conducting their business affairs as to use their productive property and their productive labor as they themselves desired in the satisfaction of their own economic wants. Such unfettered expression of consumptive desire in the form of work is exemplified by the self-employed and self-sufficing man, or family, under the simpler economic

systems. The fact that we are not able to do it in the price-organized society in which we now live throws into glaring relief the fact that we have not developed enough skill in handling our price-making activities—including the price of labor and of capital use—to enable the technological system to render to the people the full service of which it is capable.

If we were to separate the price-maker from the plant-builder, the former might say that it was not his fault that plant was partially idle; that it had been over-built and that he could not be expected to furnish a profitable outlet for whatever volume of product might be thrust upon him. As a matter of fact, however, in the real world of business, the same executive group which decides questions of industrial capacities usually decides also the questions of price policy. Thus, there is no lack of realism in our inquiry as to why modern industrial management fails to get from the plant in which it puts its capital that full capacity operation which is necessary for the minimum cost needed either for profit on investment, service to the consumer, or the most wholesome division of benefits between them. The selling right hand knows what the building left hand does, but the motions of the two are very imperfectly coordinated.

Let us look first at the situation of the individual business enterprise. Later we can widen our horizon to take in the entire branch of production or the industrial field as a whole. The enterpriser may be thought of as the inventor of a new product or as the promoter of a new commercial set-up, a new location, or what not. He starts from the existing level of prices. He says people are showing themselves willing to pay so and so much for an article of such and such qualities with certain ease of access to it or pressure to purchase it. Into this situa-

tion he proposes to inject a change in the character of articles in use or the substitution of a different article, the re-location of plant nearer to the body of consumers or with cheaper access to raw materials, or the provision of a new type of technical or commercial organization. Perhaps with the naive enthusiasm of the true inventor or the easy optimism of the typical promotor, or perhaps after a careful attempt to make scientific exploration of all the elements of cost and consumer response, this enterpriser then commits his capital, and/or that of others, to the development of a certain productive capacity.

Let us say that his guess is good and all the product he can produce moves readily at the predetermined price. Profits are so good as both to tempt and to facilitate expansion. Here management is faced by three questions: (1) How large a new unit of capacity must be added to keep existing efficiency and level of cost? (2) Can such addition or the resort to larger units, or even a more or less substantial change in the technique itself, effect such a lowering in unit costs as to present possibilities of lower unit prices? (3) Will such a lowering of unit price be compatible with the maintenance of profits if the market is thereby so expanded as to take the enlarged output? Only if he can arrive at prices which take the full product and pay a reasonable profit on the investment can we say the expansion is validated in an economic sense, no matter what may appear to be the project's technological merit.

It can hardly be doubted that by and large the aggressive rôle played by inventors, promoters, and production men in the development of American industry has exerted a strong influence toward resolving such questions most commonly in favor of "bigger and better" plants. This has been a great factor in our rapid industrial

development, and it is to be hoped that it will continue. Less successful, however, has been the handling of the price problems which have inevitably followed in the train of these courageous (or sometimes foolhardy) developments on the producing side. The fallibility of human judgment makes it inevitable that some moves will be so rash as to need to be reconsidered and counter-action taken, however wise the price strategy which may govern us in dealing with them subsequently. But in the interest of society, it is important that when capital has once been committed to a productive plant, we shall have as full and continuous operation of that plant as is possible until it is worn out and replaced by something else. What we are interested in is the development of price policies which will secure the fullest possible utilization of all the plant that can be made to pay its way. In military metaphor, it is continuously necessary to rectify our line of advance, to abandon individual positions which are unduly vulnerable, and consolidate gains along the most forward line which can be permanently held.

If prices charged for industrial products are such as to damp off market demand while 15 or 20 per cent of capacity is yet unutilized and the sign, "No men wanted," is posted at the factory gate, something must be wrong. Is it not possible under a revised price schedule to bring this capacity to use? In order to answer this question, we must undertake a brief discussion of the general problem of cost calculation and allocation as related to price policy.

COST AS THE BASIS OF PRICE

The industrial manager can stop or start his production process largely according to his own discretion. In planning his operations, he is likely to name a price or

series of prices for his product based upon prices previously charged for like or comparable articles, modified as he may think wise in the light of such information as he has with reference to his costs. If the market fails to absorb capacity output at this level of price, his first reaction is to protect himself against loss by curtailing operations at the point where this price can be maintained. He does not ordinarily subject himself to the same test of his price structure as does the farmer, who typically employs his plant and his family labor to capacity and then accepts such price as the market is able or willing to pay for his product in volume thus determined. Under this agricultural pricing system, the return to the farm family's labor and invested capital is a derivative of price. Price is thus supposed to operate as a regulator of production by diverting the farmer to the production of another commodity or causing him to withdraw from the whole field of farming. Such complete withdrawal is very difficult to effect since agriculture is to a large extent a residual occupation. Hence the corrective effect of falling prices tends rather to go back to impairment of plant and lowering of its capitalized value.

In industry, the control of outlays of both capital and labor is kept closely in hand by the manager, who seeks to protect himself by turning off labor (beginning at the bottom) and letting it bear its own maintenance cost subsequently, and by withholding his capital from use. The latter being a much less perishable commodity than labor, he has a relatively small maintenance cost, although deterioration, physical or functional (obsolescence), cannot be altogether avoided. If some way could be found whereby industry could be required to carry the burden of maintaining employment for the

full labor force; put the total product on the market to seek its own price level; and let wages, profits, interest, and capital values be the derivatives of the market revenue (volume times price) thus obtaining—then we should in theory have a method of price adjustment under which national income would be enlarged up to the limit of capacity operation of the nation's productive plant.

Obviously, the practical difficulties in the way of determining what employer should be responsible for what labor and of changing over to the type of marketing institutions which would be required under such a system are so great as to take it out of the realm of practical consideration. On the other hand, the acceptance of social responsibility for the whole population which is implied in current experiments in the field of "social security" marks an effort, in this general direction. It has the effect of shifting much more of the economic process from private business agencies to government institutions, and the issue can therefore hardly fail to claim the active attention of business men. Could we not by handling our management problem somewhat more adroitly from the pricing approach actually carry this responsibility for full and continuous employment within the industrial system itself more effectively and at less cost than by allowing it to slip over into the hands of public agencies, where the magnitude of the task, the remoteness and inflexibility of the agency, and susceptibility to political manipulation, might impair its efficient and economical functioning? This raises the question of how the business executive arrives at his determinations of cost and his judgment as to the point at which he must protect his company by curtailment of operations while some part of normal capacity is still unused.

If a single product were being turned out and each added unit were made by putting a little more direct hand labor on a little more raw material, the cost of each unit would be the same and the process of calculation extremely simple. Under modern industrial methods, however, such a condition of "constant cost" is seldom encountered. The great mass of industrial goods are turned out under conditions of diminishing costs¹ but not with smooth gradations from one unit to the next. Many of the cost items must be incurred in substantial lumps, the whole expense of which must be defrayed regardless of the amount of product which they help in turning out. Thus, the smaller the number of units, the heavier the burden of such "overhead costs," whereas, the closer to its capacity such an individual item of equipment or specialized labor is used, the less its burden, and thus the lower the unit cost as capacity operation is attained. Numerous illustrations of this point have been presented in Chapter IV.²

Furthermore, indivisible units of this sort, widely varying as to size and the volume of production which they serve, are ordinarily combined in a single productive organization. For example, a single skilful and highly paid executive may preside over a very large corporation. It may require several plants at different locations, each of which must involve an investment of millions of dollars if it is to attain a high grade of technical efficiency. Each of these plants may have a single production manager but several department managers, each highly specialized for his particular function and commanding a full-time salary proportionate to the

¹ Though sometimes under "increasing costs," chiefly as scarcity of natural materials or of labor causes costs to rise when forced production is resorted to under the spur of a war or a business boom.

² See pp. 60 ff.

scarcity of that ability in the labor market. Each factory may require a single power plant of large cost if economy in the power item is to be secured, but several minor installations for using this power in the various departments. Each of these minimum units, however, might be considerably larger than the particular pieces of equipment which are necessary to secure efficiency in performing a particular operation.

The point of all this is simply that the cost of each product turned out in such a plant includes not only "prime costs," such as the hourly wage of the worker and the material which actually goes into the product which he turns out. It must include also various "overhead costs" such as the article's pro rata share of the expense of maintaining and operating the machine on which it is made, the shop in which that machine is installed, the power plant which services it, the superintendent who directs its production, and the president and other company executives, accountants, attorneys, sales managers, advertising experts, and the like who are the headquarters staff directing the operations of the whole concern.

The cost of labor directly used may be the only constant cost in turning out such a product, since even the material may be bought on more advantageous terms if the size of the order is increased (possibly permitting economies in its production). Since the personnel in the higher grades is ordinarily retained on a salary basis, perhaps with contracts reaching over a period of some years, this cost is not reduced by curtailment of product and, within limits which in many cases are very wide, output can be enlarged with no increase whatever in these expenses. In other cases, the expense is very much less than proportionate to the expansion of output. In

such a situation, it is evident that the technical problem of management consists internally in combining the proper number of productive units of smaller size with those fixed units of large size such as hydroelectric power plant, half-million dollar president, nation-wide selling organization, or research laboratories, in such a way as to employ these specialized and expensive services to full capacity.

Only as the best technique is used and output brought to the volume where the capacities of the most expensive indivisible unit which must be used in this most efficient technique of operation and management is fully utilized will minimum cost be achieved. But while the born enterpriser, the "dyed-in-the-wool" production man, may be eager to realize this technological triumph, if this is to be done on a sound business basis, the pricing problem must be handled with finesse. Price technique and production technique are inextricably interlocked. In any allocation of costs which is to serve as a basis for pricing, the management must decide how much of each kind of overhead outlay is to be charged against each product at each level of output. It will seek to do this in such a way that no potentially productive plant activity will be so overburdened that it cannot be carried on, and yet that all costs will be distributed and the company, by recouping them in selling prices, can prosper and continue in business.

Since incomes among the masses are so much smaller than those possessed by the few, and since most wants tend to weaken as they are partially satisfied, prices ordinarily fall, sometimes rather sharply, as volume enlarges. In certain areas of demand, indeed, expansion is so rapid that while technology is taking its first long strides forward, the problem of finding a remunerative

market is comparatively simple. This accounts for the great success of the low-price policy which has been followed with automobiles and radio sets. In most cases, however, the manager has to exercise a constant care lest, with expanding volume, the price which he can realize fall faster than the reduction in cost which he can effect and thus stop his expansion of output while some of his capacity still remains unutilized.

If a new concern is entering a given field and is selling in its early months only one-fourth of the amount of product which the factory is capable of turning out, a price which loads the overhead of the whole plant on this small product would be suicidal. The price would be so high that building up sales to or toward capacity operation would be impossible, and it might even shut the concern out of the market entirely. As a practical matter, management is likely to make a price on the assumption that on the average its plant will be utilized to perhaps two-thirds, three-fourths, or an even larger per cent of capacity. If in response to a price which distributes overhead costs on this volume, output fails to reach its "normal" figure, fixed charges will not be met and the concern will be "in the red." If, on the other hand, "normal" output is exceeded, the added product will incur only the prime costs, such as labor and materials directly used in its manufacture. From the percentage utilization which just keeps the company operating, every step forward up to practical capacity operation thus entails a lowering of average costs³ and presents the possibility of lowering price as the means of stimulating market demand.

The history of practical business is strewn with illus-

³ Although it is to be expected that the last laborers to be added will be less efficient than the earlier ones.

trations of the manager who sought to recoup the overhead cost of the whole plant from a product limited to a fraction of its capacity, the resulting high price of the product itself operating to depress sales. But alongside these cases are countless other illustrations of the manager who took the opposite course, seeking always to absorb his overhead into maximum output and to translate lowered unit cost into the lowest possible selling price as an inducement to consumers to buy his product.⁴

A pioneer in this field was William M. Wood, who for many years was an exponent of capacity operation in the woolen textile industry. In 1889, he became as-

⁴" . . . In putting out new products or starting a new business it is no longer the typical American way to take years to build it from small beginnings. An article or service of definite merit (and one of this type only) may be raised to large-scale production and a profit basis in a very short time by the brilliant market-minded top-executive. In one instance, of a universal staple article, it was done by setting a price definitely lower than actual cost, and markedly lower than competitor's goods. When widely publicized this offer drew millions of buyers at once. The loss was charged up to capital investment; but the loss lasted only until a certain large-scale volume was attained after which a modest profit was shown, within one and a half years. The price was never raised; it stayed at the new low and held off competition. The loss—several million dollars—was an exceedingly cheap price to pay for a going business of the volume attained. Had the trade mark and good will of another business firm enjoying this volume been *purchased*, it would have cost several times the loss sustained. Thus the concern might be said to have *bought at half price, a new business*. True, it might have failed to make a success of this profit policy, but as every modern research method was applied in test before the selling commenced, it had proved high probability of success. This profit policy is bound to be more widely applied in the Seventh Period, it is a scientific process of market creation, matching the science applied in the factory. It is also of course a socially sound method, a boon to consumers. It is in direct contradiction to the method used in the twenties, of buying a business, recapitalizing it on an optimistic basis, at large profit to bankers, and then leaving stockholders to bear the brunt of risk, which is excessive under such conditions. Very often also the executive management of such a business disintegrates as a result of the change." J. George Fredrick, editor, *For Top-Executives Only*, pp. 62-63.

sociated with the Ayer interests, which had acquired the great Washington Mills worsted establishment and for three years had operated it on part-time and at heavy loss. Changing the policy to one of capacity operation and price reduction⁵ to clear the market of product, Wood put these mills on a profitable basis, rapidly extended the influence of the Ayer and Wood interests to include other mills, and in 1899 consolidated them in the American Woolen Company.⁶

The price reduction policy of the American Woolen Company was especially spectacular and effective during and after depressions. After the crisis of 1907, the corporation wrote off its losses and took the trade by surprise by the severe reductions, as compared with the previous year, in its 1908 prices for light-weight men's wear woolen and worsted goods.

Again, when the trade was in the doldrums after the armistice in 1918, wondering what was coming next and afraid to go much beyond hand-to-mouth business, the American Woolen Company opened up with sharp reductions in its prices. This event had an electrifying influence at once, starting the renewal of activity in the industry, which lasted until the crisis of 1920. In 1921, too, the company again swallowed its losses, as the phrase goes, and by directing prices to a lower level, was instrumental in a considerable measure in breaking the "consumers' strike."⁷

Emphasis on the attainment of the largest possible turnover was so stressed that it may be considered to have been a guiding maxim of the organization.

⁵ See pp. 102 ff.

⁶ While this was much the largest single unit in the industry, it represented less than 10 per cent of the total at the time of formation. Later it increased much in absolute size, but it never controlled more than a minor percentage of the total business, although it had a major interest in certain lines, notably men's wear, both worsted and woolen.

⁷ A. H. Cole, *The American Woolen Manufacturer*, Vol. II, p. 238.

Repeated expression has come from the company that "every loom and every spindle shall be fully employed;" that "there is no money in idle machinery;" and that "Mr. Wood insists on running his mills full." The natural resultant of this policy is that the company for the most part must make its prices "right," so as to get the business, even though the margin of profit on each transaction may perhaps be narrow at times.⁸

In view of the stark clarity of the American Woolen Company's price policy, both in theory and in practice, it would seem to be highly significant, therefore, that in a period when so much effort was made in many fields to maintain price, this company, which vigorously followed quite a different policy, was by far the most successful of any large company in either the woolen or cotton industries. In fact, it is the only large textile company which may be said to have enjoyed an outstanding and (up to 1924) continued success.⁹ Reverses which the company experienced thereafter were due to external factors rather than to price policy. The extreme prosperity of the war and early post-war period had led to expansion of plant. With the collapse in wool prices, heavy inventory losses were sustained. These were further followed shortly by actual operating losses

⁸ The same, p. 241.

⁹ It should be explained that the low prices and substantial profits of the American Woolen Company were not achieved at the expense of the incomes of employees. On one occasion, January 1921, the company put into effect a wage reduction of 22.5 per cent. At that time, however, all prices were undergoing a radical readjustment (the company's own selling prices being reduced twice that much); and the general policy of the corporation both before and subsequent to 1921 was one of paying high wages. Early in its career, a program of paying the highest wages obtainable in the trade had been adopted. During the period of rapidly rising wages prior to 1920, the company frequently led the way within the wool industry. And, having cut wages in 1921, the company was in 1922 adamant against further reductions which were at that time urged. There were times, however, when the corporation made itself unpopular among workers by insisting on large output in return for the wages paid.

as the demand for woolen textiles was drastically curtailed by changes in the style of clothing—reducing both weight and yardage—and the phenomenal growth of the rayon industry as a substitute textile material.

During the years shortly before the World War, widespread interest and effort was turning toward development and application of the principles of “scientific management” in business. This directed the attention of executives sharply to the economies of capacity operation and the use of cost accounting as a tool of analysis. Mr. Henry L. Gantt,¹⁰ one of the pioneers in this movement, illustrated the point as to the absorption of overhead cost as follows:

A man found that his cost on a certain article was thirty cents. When he found that he could buy it for twenty-six cents, he gave orders to stop manufacturing and to buy it, saying he did not understand how his competitor could sell at that price. He seemed to realize that there was a flaw somewhere, but he could not locate it. I asked him of what his expense consisted. His reply was, labor ten cents, material eight cents, and overhead twelve cents. I then asked if he was running his factory at full capacity, and got the reply that he was running it at less than half its capacity, possibly at one-third. The next question was: What would be the overhead on this article if the factory were running full? The reply was that it would be about five cents. I suggested that in such a case the cost would be only twenty-three cents. . . . The illustration which I have cited is not an isolated case, but is representative of the problems before a large class of manufacturers, who believe that all of the expense, however large, must be carried by the output produced, however small. This theory of expense distribution indicates a policy which in dull times would, if followed logically, put many manufacturers out of business. In 1897 the plant of which I was superintendent was put out of business by just this kind of logic. It never started up again.

¹⁰ *Organizing for Work*, pp. 30-31.

The principal difficulty in attempting to enlarge one's market through the appeal of low prices on the additional product produced at low marginal cost is that, though the reduction in cost applies only to the additional product, any price concession tends to lower the price of all the product. If a small price concession opens up a large additional area of demand and the overhead charge is relatively high, it may be possible to step production up to capacity, lower price to a point which absorbs the whole output, and increase profits in the process. But even if demand is too inelastic to prevent this, it does not necessarily mean that the manager, in order to keep his company in the black, must support prices by less-than-capacity operation, allow part of the plant to remain idle and a proportionate amount of labor to go unemployed.

With sufficient skill, the additional low-cost product can often be placed in a special low-price market where it will satisfy wants which would not otherwise be met without disrupting price relations in the existing market. Even when the markets are thus segregated, the consumers in the original market may derive a substantial benefit if some (though less than proportional) part of the burden of overhead is carried by the low-price market or, still more, if expansion in this field permits of the introduction of further economies in the productive process which will apply also to the original output.

SEGREGATED MARKETS AND COST ALLOCATION

One of the simplest illustrations of low price on part of a uniform product as a means of expanding demand and securing the economies of capacity operation is in the sale of "off-peak" output of a commodity which can not be economically stored. In the main, electric utilities

were originally installed and their capacities determined by the highest-value market, namely, that for domestic and public illumination. This means that their capacity must be sufficient to furnish adequate current to supply lighting circuits on the night of December 21 each year²¹ regardless of the fact that this capacity is very imperfectly utilized around June 21 and is practically idle during daylight hours. Increasingly as time has gone on and more study has been applied to this problem, our electric utilities have developed a rate structure designed to stimulate the use of slack capacity during the hours when it is not needed for its highest-cost function—illumination.

Although the quality of the product is absolutely uniform, it is easy to segregate the uses to which it is put between domestic, public, and commercial. Government agencies, even if they use their current entirely for illuminating purposes, may be regarded as entitled to a lower rate because of the large volume which they take and the greater economy in delivering it to them in these large quantities. The "commercial" rate may be a similar quantity rate to any non-domestic and non-public user, even though the current is used entirely or largely for illuminating purposes. But there may be a further distinction for commercial users between current taken for lighting and that for power. Unless power use is strongly stimulated, it is hardly possible to get full utilization of the off-peak capacity, and the rate for power use must be much below that established for lighting purposes if current is to be taken in these large quantities in competition with steam or other sources of industrial power.

Segregation of the market here is comparatively easy,

²¹ With such "stand-by" capacity as it is deemed necessary to provide for possible breakdowns.

since separate transformers and meters can be installed for current taken by a manufacturing company for power purposes as distinguished from that which the same company uses for lighting. Similarly, the use of electric current for non-lighting purposes in the home has been stimulated by making a lower rate for current used for heating, cooking, and miscellaneous appliances, such as washing machines, ironers, cleaners, and so forth. In order to avoid the cost of installing a separate meter for such uses, this is sometimes handled by merely offering regressive rates, so that an amount of current approximating average family consumption for lighting purposes will bear a basic and relatively high rate, but this will be reduced at three or four successive stages as additional non-lighting equipment calls for the consumption of substantially larger quantities of current.

Another well-known method of segregating markets and using lower prices in one part to maintain capacity operation and low-unit cost for the rest is export dumping. Along with such advantages as this method may possess, it involves difficulties, political, if not economic. But dumping may be applied within the limits of the domestic market and there used for the purpose of giving the benefits of low cost attained through capacity operation to the poorer classes in the community while still using the larger purchasing power of the more well-to-do to support a market whose higher cost on smaller volume of production they are fully capable of defraying. One of the simple forms of this practice is that of producing in the volume necessary for economical operation, selling on a standard-price market throughout the regular season, and reducing price on any unsold stock at the end of the year in order to clear the market. This was the method upon which chief reliance was placed

by the American Woolen Company. Where the element of style and seasonality are strongly involved, this enables those who can afford to indulge their whims to be leaders in style and make their purchases at the time which pleases them most, while out-of-season bargains are made available to persons of small income.

Various other devices, such as the store basement, the use of cut-rate stores for the disposal of "manufacturers' remainders," and the like have been employed to somewhat the same end. All these, however, shade over into emergency devices and salvage operations. For our purpose, it is much more important to consider those more systematic and permanent methods by which the producer steadily cultivates and serves the masses who have restricted purchasing power by passing on to them the benefit of the lower costs which can be attained by keeping output up to plant (and labor) capacity. Of course the product of the typical industrial concern does not consist of a single unified commodity selling on a homogeneous market. Instead, the plant is engaged in turning out a variety of types, grades, and designs, with the frontier of its operations, if it is a real pace-maker in its field, being constantly pushed out to larger areas of consumer satisfaction at lower levels of price. To follow our analysis farther in this direction, we need to examine a few of the simpler propositions involved in the industrial manager's use of cost accounting procedures as a guide to pricing policy.

It is a truism that a concern cannot remain in business permanently unless prices equal or exceed cost of production. In a typical industrial concern turning out several classes and grades of a product, along with various by-products, or perhaps a group of articles quite different in their manufacturing processes and the mark-

ets which they supply, it is impossible for a manager to *know* what the cost of each of these individual items is. Each of them will carry an individual price, but its cost is inextricably involved in the joint cost of producing other products also. The most that the manager can do on the cost side is to formulate some useful theory of estimation and decide upon some procedure for distributing total expenses of operation among all the articles on whose behalf they are incurred. In so doing, he must exercise the highly important managerial function of so allocating cost load that the prices based upon the costing system will produce such a market response on the one hand and utilization of facilities on the other as will keep both the market and the producing system healthy and growing.

Not merely are costs incurred jointly for different products turned out by the company as originally set up. It may be that a company which goes into business for the primary purpose of producing a single type of article, with perhaps incidental by-products, finds as it studies the problem in practice that it can round out its organization, utilize waste materials or unused fragments of capacity by adding some supplementary items to its list. This is one of the most important ways in which the alert business manager may reduce his costs and enlarge his service by bringing his plant to capacity operation.

Such situations are the rule rather than the exception in modern industry and present serious questions as to accounting procedure, which on its costing side is designed to be a guide to the executive in approaching his price problems. The accountant is likely to try to simplify this task by making such allocations on a more or less rule-of-thumb or arbitrary basis. Books can be

made to balance under one such procedure as readily as under another. But the effects in the guidance of the executive and thus their repercussions on the economic process are widely divergent. The executive needs a purposive or constructive allocation of these charges rather than one which is mechanical or arbitrary. For he is not concerned merely with balancing the books but with promoting the prosperity of his company. In proportion as he interprets that prosperity in broad terms and in the long run, his concern becomes identical with that of the economist who wants to see the pricing problem so handled that the conduct of business will minister most fully to the welfare of the people.

The present volume is not the place to attempt any comprehensive discussion of cost accounting techniques nor do the authors claim special proficiency in this field. The scope of our analysis, however, does require the consideration of a few typical ways in which the computation of unit cost may be treated in arriving at price policies designed to effect capacity operation and maximum service to the buying public—which means reaching the largest possible number especially in the low-income brackets.

Let us take the case of the meat-packing industry, which operates about as closely on a specific cost basis as any business we have. We will say that a given plant has been so pricing its output as to defray total costs from its accustomed run of products. It now develops the technical processes by which to salvage as by-products what formerly went as waste. The same unit charge for overhead which it has been in the habit of spreading over its regular products may be put on the by-product. If so, its price may be so high as to prevent the development of the market. But by charging overhead entirely to

those products for whose production it has already been incurred and pricing by-products virtually at the cost of handling, a desirable additional source of revenue may be developed and wants satisfied more fully and at lower cost than would otherwise be possible. Some such policy was in fact developed by meat packers to the point where it was currently said that "meat defrayed cost of operation and by-products made the profit."

Recently, one packer, more thoughtful and more ingenious than his fellows, has proposed that the present combination of restrictive measures and inadequate diets could be removed by carrying the process of differential pricing still farther. This would involve widening the price premiums on the choice cuts, supplying only the amount of these items that could be absorbed on that price scale, and diverting the remainder into sausage (the base product in the packer's price structure). He argues that such a procedure would keep large supplies of hogs from resulting in unnecessarily low prices to well-to-do consumers, thereby producing unremunerative prices to producers, whereas by pushing overhead entirely onto the upper price brackets, producers would be adequately remunerated, and the effect of full supply would go entirely to the fuller satisfaction of the food needs of the poorer classes.¹³

Here the simple process of grinding segregates meat in the lower consumption areas, where it is welcomed as bulk sausage at a low price, from meat in the higher area where it readily commands price premiums as hams, loins, and bacon. In the field of mechanical products, the differentiation is more complex but at the same time presents more adequate opportunities for the exercise

¹³ It is recognized, of course, that any such price scheme could be carried out only by concerted action among hog packers. The government would have to approve it as a "combination in promotion of trade."

of astute price strategy. In Chapter III, we illustrated the case in terms of electric refrigerators, which supply all the essentials of mechanical excellence at a price base of approximately \$100 but carry heavy premiums on de luxe grades. Radios present another illustration of a market whose several parts can be easily segregated, giving the benefit of low-price marginal output to the lowest income group of consumers. Thus, in the midst of depression, one of the large mail order houses has found it possible to contribute to capacity use of radio plant by putting out a five-tube automatic-tuning set at approximately \$10. It is obvious that this set does not compete with the rich man's remote control radio designed to be an ornament to the furnishings of his library or drawing room. Both performance and cost of the two sets are widely disproportionate to the prices at which they sell. But the low-priced set does not spoil the market for the high-priced. In fact, the availability of very cheap sets tends to tempt even the well-to-do person to install additional sets in his den, bedroom, seaside cottage, or mountain cabin, without for a moment thinking of foregoing his high-priced living room radio.

In the same way, the low-price car field is readily segregated from that of the high-priced car not merely by differences in number of users but by the fact that the man who has the highest priced type of car may also have other needs which he will gratify more fully in proportion as cars of good quality are available at lower cost. Thus many families that would not purchase two expensive cars gladly avail themselves of the chance to get into the two-car class by having a relatively expensive family car and a cheap "business coupe" and even a third one when the son or daughter of the family attains the proud age of sixteen.

With reference to goods whose market has a high degree of seasonality a particular application of the system of costing on normal volume and differential pricing of marginal output may be found. Thus a plant of this type may in the off-season turn out some more of its regular product, if it can be put in a special non-competitive market. Or it may devote seasonal slack capacity to the production of a different product but one sufficiently similar so that plant and labor can be effectively utilized. Here we find the interest of the plant in trying to exploit its unutilized capacity meeting the interest of large manufacturing buyers or large distributive concerns who see this as a means of securing supplies at a favorable figure. Thus, the maker of automobiles, whose operations are highly seasonal, may, by ordering far in advance, have some particular part made in its off-season by a light manufacturing company, which can, because it thus attains capacity operation, afford to supply this item at little above prime cost. Or a mail order house may get its supplies cheaply by off-season operation of plants whose products are at other times sold on a much higher basis to a more exacting seasonal trade.

Lastly, we should not leave this discussion of capacity operation as a factor in price reduction without mentioning the enormous influence exerted in recent years by the development of large-scale merchandising organizations. Under this designation should be included mail order houses, five and ten-cent stores, and grocery, drug, and specialty chains of almost every type from hardware and auto auxiliaries to candy as well as the larger department store organizations and combined mail order and department stores. To some extent, even the larger wholesalers and jobbers exercise this same in-

fluence by using massed purchasing power to offer contracts for continuous operation, or orders which can be made complementary to other operations of manufacturers in such a way as to exert a strong influence toward capacity operation and minimum cost.

We should revert also to what was said in Chapter IV with reference to contract relations between large manufacturers and small auxiliary concerns that furnish parts to be assembled by the larger manufacturers. This type of coordination is a significant means of stabilizing demand and securing the economies of capacity operation by the smaller concerns. As an illustration, we may recall the stove factory of a large mail order house discussed on page 44.

CHAPTER VI

MARKET CONSIDERATIONS AFFECTING PRICE POLICY

In the preceding chapters, we have examined three forces in American industry and business which contribute to giving the consumer "more for his money." These three aspects of production technique included the scientific or engineering factor, the factor of organization or business structure, and management or operative policy. By utilizing constructive possibilities along these several lines of approach, it is possible to effect a large measure of that reduction in cost or enhancement in dollar value which is the chief gauge of consumer well-being. Whether these potential gains in public welfare will actually be achieved involves other factors which arise not in the plant or office but in the market. Some of these limiting conditions must now be examined.

In this chapter we shall consider three questions which inevitably confront the industrial executive who contemplates a course of price reduction. They are: How will the market respond? How will other producers react? Are there better alternatives?

THE MARKET'S RESPONSE TO PRICE REDUCTION

If the industrial market were like most parts of the agricultural market, we should have little or nothing to say about the rôle of the executive as price-maker. The seller of wheat or cotton can have no price *policy*: he simply pours his product into the general channel of trade to be blended in large lots under standard grades and sold in a market open to the forces of world-wide competition. Few manufacturers, if any, sell in a market

which has this kind of competition and in which producers and their products are accepted as entirely interchangeable. The typical industrial product of today has more or less distinctive qualities, and its producer ordinarily attempts by ingenuity to accentuate these differences and to enhance the public estimate of them. It is against the background of such a differentiated market position that he considers the problem of the prices at which he shall offer his goods. What will happen if he lowers a price? If he raises it?

No general formula can be devised for the answering of these questions. Much depends on the wants to which the particular article ministers and the peculiar character of demand for it. Whether or not the business man has picked up from the jargon of economics the phrase "elasticity of demand," he is almost certain to start from the premise that price will make some difference in the quantity sold and that, broadly speaking, more can be sold at a lower price than at a higher. On the other hand, practical experience may have taught him that any such rule is not to be taken too literally or as having universal application.

Consumer goods. There is a small, wealthy part of the market in which lowering prices brings no response in terms of enlarged sales—or even an inverse reaction. Certain goods are regularly sold on "snob appeal," the price intentionally kept so high as to limit sales to a small number of consumers in the upper income class.¹

¹ Freed of any concern for economy, these buyers are interested rather in having the price maintained at a level high enough to preserve the "exclusive" character of the article bought. The manufacturer can cater to this desire, recoup the relatively high costs of small-scale production, often with individual design or special finish, and still make satisfactory returns because this is essentially custom business, done on a cost-plus basis. It does not, of course, permit of any considerable expansion in size or great advance in efficiency of production and does not contribute to

But even consumers whose incomes are so meager as to give them ample reason for taking advantage of every price reduction they can secure may be so set in their consumption patterns or their notions of the relation between quality and price as to cause them to overlook better value when it is offered. Knowing this, the manufacturer who has built up a satisfactory demand for a branded article may fear in advance or even demonstrate by experiment that the price concession which he finds himself able and willing to make does not enlarge sales but instead curtails them.² People may be so certain that impairment in quality will necessarily accompany reduction in price that they transfer their patronage to another article whose price is being maintained.

Such a situation is particularly likely to appear in a field where total expenditure for the article is relatively small and where the consumer attaches so much importance to high quality that he acts on the rule that "the best is none too good." Experience seems to indicate that toothpaste, cosmetics,³ and other toilet articles fall

the well-being of the masses. Hence it lies outside the bounds of our present inquiry.

² Numerous practical marketing studies indicate that around many articles of popular consumption, the public has crystallized certain ideas of proper price. This, from the standpoint of the seller, tends to establish an optimum point—at which greatest sales can be made. If prices are changed from this optimum, either upward or downward, sales tend to fall off. Goods in the retail field seem to sort themselves out in definite quality gradations, each of which has its optimum price range. One store cannot ordinarily change these points by itself. A large department store which features cut prices found on careful study that sales could be most effectively stimulated by marking prices only about 6 per cent below those of other department stores. Cut-rate drug stores have found that it seldom pays to take off more than a few cents from standard prices.

³ When American manufacturers first began to make high quality cosmetics, they found difficulty in selling them at low prices in competition with imported goods, whose higher prices the public had come to accept as representing high quality. The American companies thereupon

largely within this area of demand. Here the consumer often displays an almost superstitious belief in the efficacy of certain preparations and acute fear of any possible impairment in quality.

Even if apprehension as to impairment of quality does not in such cases rise spontaneously in the mind of the buyer, it is quite likely to be implanted there by the seller of rival products. This is a real danger to the producer of a branded article with an established place in the market. To combat it and maintain his volume of sales (to say nothing of enlarging them) is likely to entail heavy costs. Hence, he may decide that the safe as well as the easy way is to maintain the existing level of price. But if he is disposed to take a more aggressive course, the difficulty may sometimes be met by differentiating the market between groups on different income levels. The shrewd manufacturer often discovers that the best way to maintain sales in the market in which he first became established on a relatively high price is to maintain his price in that segment of the market while expanding his market elsewhere by lowering prices. This may be done by putting out an article of substantially the same quality but in a different (probably cheaper) container for sale to a more price-conscious class of trade. In order to secure the maximum

put prices of their products up to the level of those charged for the foreign products and were gratified, not to say amazed, at the way in which mass buying began.

It has long been recognized in the cigar industry that to change the price from 10 to 5 cents or from 25 to 15 cents usually does not stimulate demand in the markets formerly supplied but tends to push the product from the customary group of buyers to those used to a cheaper article. Whether or not this opens up a larger area of demand for the particular brand, it is doubtful that lowering the prices of a product whose use is so definitely a matter of taste and habit as that of cigars, has any considerable effect in enlarging total consumption.

of promotional effort, it is often desirable to put the cheaper article under a distributor's brand rather than a new low-price label of the manufacturer himself. A prime consideration in such an undertaking is to exploit aggressively the demand of low-price markets and at the same time avoid competition in the higher brackets.

With reference to elasticity of demand, as it affects the producer's price-making policies, a word must be said about the time factor involved in the market response. The ultimate effect of price reduction may be quite different from the immediate effect, and this is a practical consideration which must be carefully considered by the price-maker. It may be that the immediate effect of a price reduction will not be noticeable or may even be adverse because of the reasons cited above,⁴ whereas after time has elapsed to reassure consumers that quality is being maintained and to modify patterns of consumption both by old consumers and by new ones attracted by the price reduction, the ultimate effect may be expansion which fully justifies the adoption of this policy.⁵ Whether a given executive will follow the course of price reduction will depend not merely on his faith that such an ultimate result will be brought about but also on his financial ability to absorb any losses which may be involved during the waiting period. Obviously the company of strong financial resources is in a position

⁴ In the very short run also, a price reduction may chill demand if the buyer feels that it is the precursor of further cuts. This, however, is more characteristically a phenomenon of raw material buying and of depression periods. It relates also to a much shorter time period than that to which our analysis is directed.

⁵ Boom times tend to build up easy-going habits of consumer expenditure relatively unresponsive to price appeal. Times of depression, on the other hand, make consumers more price conscious and create an atmosphere in which the producer who offers a larger value is likely to secure most prompt and satisfactory response.

to follow a long-time constructive and courageous policy of price reduction much more readily than is the small company with limited resources. Whether or not it will in fact do so is another question to which we shall return later in the chapter and in the one which follows.

Several of the larger and more unpredictable issues which are involved in this matter of market promotion are well illustrated in the case of one of our great chemical companies. It had perfected a transparent, moisture-proof wrapping material during the years just preceding the collapse of 1929. A large amount of money had gone into developmental work and the equipping of plants capable of turning out the product in volume. Since this high type of packaging was relatively expensive as compared with other ways of handling goods, it looked as though the line might be a decidedly unprofitable one during a depression period. However, through further research applied to the distributive problem, it was possible to exploit the distinctive usefulness of this material in improving the appearance and hence sales appeal of goods. The new type of package developed kept goods in more sanitary condition, protecting against breakage and waste from soiling and handling. This reduced the selling cost, and since merchants were particularly concerned about small losses at such a time it was possible—in conjunction with a moderate price policy for the material itself—to expand sales in a manner gratifying to the producer. In order to facilitate the wider use of this new product, a good deal of research has been devoted to perfecting packaging machines.

The investment in producing this commodity was increased steadily from an index of 100 in 1928 to 944 in 1937, sales volume meanwhile rising 19.5 times. This volume and the further perfecting of the process re-

duced cost per pound in 1937 to less than half what it had been in 1928. Owing to an even greater reduction in price, net profit per pound dropped to one-fifth. With the expansion in sales, however, total net profits practically quadrupled. (For detailed figures, see App. D.)

As to expansion of sales in response to price reduction, two situations need to be distinguished. The first is that in which sales of the price-cutter expand at the expense of other sellers of the product. In the second situation, there is an expansion in the total market for the given article. If a producer, because of greater efficiency, greater courage, or willingness to accept a narrower margin of profit, lowers his price, and other companies are either unwilling or unable to follow this reduction, the tendency will be for business (subject to the limitations discussed in preceding paragraphs) to be diverted to him and away from the producer who maintains prices. Since the latter loses in this process and since the larger volume which the price-cutter gets at his lower price may not enhance his total profit as much as the others lose, it might be argued that this is bad business all around. It must be remembered, however, that from the social standpoint we now have the wants of the public supplied more fully by the producer of superior efficiency. Furthermore, since the gain in volume may enable him to cut production costs still further, the process has a dynamic quality which constitutes the basic merit of private capitalism under a regime of competition.

Such a process works out more fully, however, and to the greater satisfaction of all parties in those situations in which reduction of price to consumers permits of expansion in the total market. This kind of elasticity is exemplified particularly among the luxury or semi-

luxury groups of commodities, such as automobiles,⁶ radios, and low-priced amusements, notably movies. The total volume of expenditures on such articles has increased enormously during recent years, in step with an aggressive program of price reduction on the part of producers of these goods.⁷

⁶The precise nature and degree of the demand for automobiles present some very interesting questions. Makers of low-priced cars, led by the Ford and Chevrolet, and later joined by the Plymouth, demonstrated that possibilities of expansion to reach low-income groups were very considerable and continuous as they moved from the \$2,000 or \$2,500 level to the level of \$500⁶ to \$700. But around that level they found the stream of new car absorption meeting the rising tide of used cars. The price schedules for the latter, starting at practically the zero line, presented a real problem of adjustment of the related price structures at the level where the potential buyer could well consider the advantages in the way of comfort, appearance, operating cost, and prestige to be derived from buying a used car from the medium or even higher priced groups as against what he would get by purchasing a new car from the low-priced group. The result appears to have been a practical cessation of further lowering of prices in the latter group several years ago, since when competition has been in terms of appearance, mechanical quality, and operating and maintenance cost.

Recently it appears that a new factor has come into the situation. With the greater congestion of city streets and parking places, the question of size in a car seems to be viewed in a new light by the potential owner. The heavy car, with long wheel base, still makes its appeal to the sense of luxury and prestige. But with the improvement of roads and the mechanical perfecting of cars, its importance for comfort has been much reduced, while the disadvantage of extra size is increased as taxation of the car tends to be scaled upward in accordance with weight or horsepower. Finally, the greater ease of handling the small car in congested traffic or of finding parking space for it seems to have increased small car appeal to the point where possibly a new elasticity of demand will develop in this part of the automobile market to which the price structure will need to make further adjustment. The present season sees renewed effort to expand the market both for "midget" cars and for the recently introduced model intermediate between midget and standard small car types.

⁷Marcus Loew was a pace-maker in the movement to glorify the nickelodeon into a "picture palace"—with pipe organ and everything. He and others in this movement expected to make such properties profitable by charging admissions ranging up to \$2.00 per seat. At such a scale of prices, the costly theaters remained half empty. Seeking a remedy, Mr. Loew became impressed with the fact that "more people have got a

The interplay here between the ability of the producer to achieve technological progress and his willingness to pass it on to consumers, thus causing his market to grow so vigorously as both to stimulate further advance in technique and to make it financially possible, has been an outstanding dynamic factor in our economic life, particularly since the World War. These industries (with their secondary effects on road-building, steel making, cement manufacture, clear back to safety glass and soy beans) have in fact been the pace-makers both in the prosperity period of the 20's and in the recovery from the bottom of the slump of 1932-33. How to meet the situation of the next few years presents a serious challenge to their pricing policy and that of those who supply them materials.

Such growth need not be at the expense of other industries or groups of producers, since expansion of a given market furnishes work for labor not previously employed or for the more intensive utilization of the labor force by equipping it with more and more labor-saving devices. If this result is to be accomplished, however, the same aggressive program of efficiency increase and price reduction must be followed in all departments of the economic system. Otherwise the price maintenance areas will suffer at the cost of the areas in which bigger dollar values are being offered. It seems clear that not all the growth in the fields of cheaper and more comfortable transportation, of entertainment, and of education (automobile, radio, movies) have been net gain, and there is ground for suspicion that the area which suf-

dime than have got a dollar." Today the broad foundation of moving picture profits rests on dimes and quarters, with prices of admission at downtown theaters rarely exceeding 65 cents.

ferred most in the process was that of housing, where prices have been notoriously resistant to decline.

In comparing these fields, we must bear in mind that greater elasticity is to be expected in the superstructure of semi-luxuries rather than in the foundation strata of subsistence needs, such as housing, clothing, and food. Even these latter, however, possess a considerable degree of elasticity. This fact is clearly illustrated with reference to clothing by the great expansion in the market for silk and rayon hosiery, smart footwear, and modish and well-tailored garments for men, women, and children which have been greatly reduced in price over the last few decades in response to mass production methods and competitive pricing. The wardrobe of the mechanic and of the shopgirl now includes some "sports" clothes and a bathing suit.

Food seems naturally to come at the bottom of the scale of elasticity of demand. The elasticity of the market for food products as a total is in fact comparatively slight in the middle and upper brackets of the population, since people of these groups are already so well nourished. But to an extent hardly realized by many people, there is an area of unsatisfied wants for fruit, vegetables, and dairy products, meat, and even bread and cereals among the lower classes of our population. The recent report⁸ of the committee of the League of Nations on the problem of nutrition calls attention to the importance of this need. It is one which can be met in significant measure through pricing policies designed to lower prices of plain but wholesome foods

⁸ *Final Report of the Mixed Committee of the League of Nations on the Relation of Nutrition to Health, Agriculture, and Economic Policy, August 1937.*

so as to put them more fully within the reach of the lower income groups and at the same time employ more adequately the productive resources of the country.*

Producer goods. As compared with the demand for consumers' goods, we are inclined to think of the producer goods market as being relatively inelastic. But since the demand for producers' goods is a derivative of the demand for consumers' goods, it is evident that expansion in the latter field must be reflected more or less accurately in the former. The fact that it is a derived demand, however, means that the possibility for expanding sales grows out of the possibility of making money by selling consumer goods. The demand, therefore, fluctuates widely according to this prospect rather than responding with any great degree of sensitiveness to changes in the prices of producers' goods. This fact is readily illustrated in the experience of the manufacturer of locomotives, machine tools, steel rails, and other similar classes of goods.

It is obvious that railroad executives do not lay down new rails or replace locomotives or cars just because they are cheap. The time for discarding old equipment is determined by engineering considerations, possibly accelerated by Interstate Commerce Commission requirements as to safety, by general business conditions, by the financial position of the road, and by the ability of the

* Promising lines of attack on this problem have been explored by the National Association of Food Chains, which has organized comprehensive campaigns to feature products which because of seasonal factors are in relatively redundant supply and to work out a scheme of pricing which will move them into consumption. The application of similar "constructive" price policies to the distributive problems of cooperative organizations of producers has been examined at some length by the senior author before the recent annual conference of the American Institute of Cooperation. ("Certain Post-War Trends in Agricultural Cooperation," *American Cooperation* 1937, pp. 28-39.)

market to absorb equipment trust certificates.¹⁹ Somewhat the same position might be taken with reference to fabricated steel used in factory construction or special types of machine tools, many of them built on individual specifications for the equipping of factories. Such equipment is bought when business is prosperous or expanding. At such times the user must have the new equipment. In times of depression or slack business, few sales can be made, whatever price concessions might be offered.

But this does not mean that even in these markets the seller does not have to consider in the long run the effect that his price policy will have on the responses of the market. If he is not concerned with reducing the cost of his wares (as measured by the service they render) and if he does not give the benefit of these savings in reasonable measure to those who use the product, the business of these users will be retarded because of their lessened ability to serve the consumer in more elastic areas of demand. The relation between cost of railway equipment and freight rates is very remote under government regulation of rates. But the comparative price of sheet steel and of aluminum alloy is, as pointed out in Chapter IX, a significant factor in determining the character of automobiles we are able to buy. Likewise, the cost of machine tools and of steel is by no means a negligible factor in the cost of automobiles. This cost, translated into selling prices is, in turn, a substantial factor in determining the scale of activity in the automobile industry and its part in the whole pro-

¹⁹ Though no doubt a really substantial reduction in prices of rolling stock would release some additional orders, particularly of more comfortable types of passenger cars calculated to attract traffic or larger or more efficient types of freight cars or locomotives calculated to effect operating economies.

cess of economic expansion and national prosperity. This was well illustrated during 1937.

Sometimes, even in these producer goods fields, elasticity of demand is fairly pronounced. With computations of unit costs under alternative methods brought down to as fine a point as they are today, the demand for labor-saving machinery of heavy and expensive types may sometimes depend on comparatively small price differences. Likewise a plant manager may not install machine equipment for certain incidental tasks where the units are large and the costs high, whereas a little ingenuity in lessening this outlay may tip the balance in favor of the new equipment. This may even go so far as to cause what is normally sold only in the producers' market to get over into the field of private consumption or domestic use. In recent years, manufacturers of electrically driven lathes, saws, and planers opened up a new and profitable market by producing units of surprisingly moderate cost suitable for installation in the suburban garage or family basement. As this trade was being built up, it appeared that there was also an expansible demand for such equipment in small wood-working shops and even in pattern shops of larger concerns, where its lesser space requirements and lower cost made this lighter type of equipment much more desirable. At the lower level of costs it could profitably displace hand methods in small corners of the field which had not been eligible for the larger equipment.

In the field of both producers' and consumers' goods, the buyer's response is often circumscribed by the fact that a given article has no utility when standing alone, but is subject only to joint demand along with other things. The number of nails which will be purchased depends chiefly on the volume of construction and has

little relation to the cost of nails. Similarly, lowering the price of tires and batteries would not much expand their sale if the number of automobiles in use were stationary or declining.¹¹ But the fact that the seller of one of these joint products cannot directly stimulate demand by lowering price does not mean that there is not a significant indirect effect. If the prices of nails, lumber, cement, paint, builders' hardware, and plumbing supplies are all maintained on a high level, the whole construction industry is retarded, whereas a lowering of all these prices would permit expansion of the market for all goods used in house building. Similarly, the possibility of expanding the use of automobiles by making prices moderate depends upon the prices at which the automobile maker can get tires, batteries, and all the other items that enter into his cost of manufacture. In order to achieve maximum stimulation of automobile sales, prices for these underlying items must be the lowest attainable under the improved techniques made possible by this expanded volume.

The price-maker is obviously bound in the last analysis by the limitations of market response. Less response can be secured in some places than in others, but there are few if any areas in which inelasticity is absolute.

COUNTER-ACTION OF OTHER PRODUCERS

A second run of considerations which is bound to have a large influence on the action of the price-maker concerns the counter-action which may be taken by his competitors if he should undertake to reduce prices. It is

¹¹ It is common experience that when automobile tires were high-priced, car owners tended to use blow-out patches, retreading, and every possible device to stretch their mileage to the utmost. The lower prices and greater mileage which characterize modern tires tend to encourage less repair and earlier replacement. Much the same situation is illustrated by batteries.

clear that if they show no response to his action, he has the maximum opportunity to reap advantage by expanding his own market. If, on the other hand, competitors adjust their price by substantially the same amount as he, the relative position of all will be maintained, and no firm will gain any immediate advantage from the improvement in production methods, while consumers will enjoy its benefit. This, however, is only the first effect if, as pointed out in our previous section, the commodity is one which has an elastic demand. In that event, all producers after giving the benefit of technological advance to consumers will win back part or all of it, or even an added advantage, through the expansion of sales—which in turn may permit of new economies.

The timorous executive, discovering himself in a position of enlarged profit as a result of improvements which he has developed or which have come his way, may have a lively consciousness of the probability that others will meet any price concessions he makes. As a result, he may be so fearful lest there be no net gain remaining to him that he "stands pat" and withholds the reduction. This may be all the more the case if he is a relatively small producer and fears that larger producers will be so resentful at his price cutting that they will initiate drastic retaliatory measures to punish him and perhaps eliminate him from further competition, after which they can restore prices. Such a course is quite possible and has often proved successful where those who retaliate with "cut-throat" reductions have larger financial resources than the concern which initiated the reduction. If, on the other hand, competitors are weak, the producer who contemplates price reduction may fear that they will cut below his price in sheer desperation and that even if they are forced into receiver-

ship in the process, their plants will still keep operating on this rather abnormal basis of competition.

Another type of consideration leading to the decision not to reduce prices may grow out of a feeling that, with one's superior efficiency, the price cuts which he is able to make will so enlarge his share of the business as to embarrass if not ruin other producers who are less advantageously situated. Such considerations might very properly modify the timing of a price reduction program or the rate at which it was to be put into effect. But in the long run it cannot, in the interest of our economic system as a whole, be used in justification of general policies of price maintenance. Otherwise, we should be conducting the nation's business in the interest primarily of the inefficient and be throwing away the advantages of technological progress made possible by the march of science and invention. But under prevailing interpretations of anti-trust laws, many a producer feels the need of being wary of any move which will increase his relative share of the business at the expense of competitors.¹²

The inclination of producers to abstain from conferring price benefits on consumers because of fear of retaliation on the part of other companies may become generalized into a complacent and unprogressive policy of "following the leader." If one, or a small number of concerns, occupy a position of power and prestige in a given field, they may elect to pursue a policy of "live and let live." They may accept a comfortable margin of profits for themselves, which will allow less efficient firms to survive and firms even more efficient to make handsome profits on a reasonable share of the business so long as they "are good" and do not go out to attract

¹² See Arthur Burns, *The Decline of Competition*, pp. 19-20.

additional business on the basis of price appeal. It is widely believed that various independent steel companies "pull their punches" and enjoy a comfortable life under the broad wing of "Big Steel" rather than engage in battle on the plane they know would ensue if they set out to bring to the consumers the maximum benefit which could be conferred under the present knowledge of steel-making technique and the equipment available for putting it into effect.¹⁸

At this point we need only indicate the nature of these issues. Illustrative cases will appear in later chapters.

ALTERNATIVE METHODS

Since the business executive has his attention focused primarily on the problem of maintaining volume of sales and profits and secondarily on bringing to consumers as large a measure of satisfaction as is possible from the article which he supplies, it is natural that he will think of the practical alternatives to price reduction. This is particularly true if he is dubious about the response of the market to lower prices alone or apprehensive that price reduction may bring on retaliatory action by other producers.

If a manufacturer seeks to enlarge output in order to

¹⁸ This has been the outgrowth of the policy of "friendly competition" which was the distinctive contribution of Judge Gary when he was president of the Corporation. By a somewhat satirical twist, it was this very policy of not setting a fast pace for competitors (which might lead to the elimination of the less efficient) which enabled the Corporation to escape dissolution in 1920 (see p. 188). That is, the company was accepted as meeting the specifications of competition just because it had rendered such competition innocuous. Myron Taylor, as president, followed the Gary tradition. "In the past, [he said] the Corporation has been a good competitor and has allowed others to live beside it." But the others are not always willing to hold down to this slow pace. They have cut prices and even encroached on "Big Steel's" percentage position, thus creating an acute problem of policy for the new management.

get capacity operation or economies attainable through new types of mass production, he is likely to consider first the possibility of enlarging his market through conventional methods of sales promotion, of which advertising is the most conspicuous and entails the largest total outlays. He may feel that with redoubled efforts in this direction, the larger output can be absorbed without the necessity of price reduction, particularly if the change in the character of the article gives new talking points. He may be encouraged to believe that volume will enlarge sufficiently at existing price so that added promotional effort will be relatively not very expensive and leave him in the end a substantially larger volume of profit.

If this sales effort takes the form of activities which are informative concerning new materials or equipment, or proffering useful service to prospective buyers, such as technical advice as to an economical and attractive layout of a kitchen which is to be remodeled or of a new factory installation, the value of the service may be the very real equivalent of a reduction in price to the actual buyer. If it takes the form of a radio program which brings really fine music or other good entertainment to the air, or if it helps to support newspapers or magazines, it is in essence a premium distributed gratis not only to buyers but to the general public, but with the cost levied on buyers.

In other cases, sales effort may prove an essentially wasteful expenditure which not only fails to benefit either the consumer or the general public but may waste the time of both interested and non-interested persons in talking to high-pressure salesmen or in seeking to escape them. Likewise some advertising may be expected to effect net expansion of the given line, whereas in other

cases it may merely draw patronage from a rival producer. If such a diversion is to a better product or facilitates the scale or methods of operations which result in lower production costs, it is true economic gain. It may, however, not effect improvement but be neutral or actually harmful.

One factor in this problem is the extent to which the concern does its own sales promotion and thus has a selling organization which it will maintain in any event—in other words, whether sales cost has been largely built into “overhead.” The more fully sales costs are in the “variable” class, service being purchased from an outside agency, the easier will it be for management to shift emphasis from such intensification of sales effort and to use the appeal of price reduction as its means of sales expansion. Likewise, the closer the business is to saturation of the market for its present type of goods at the existing level of price among its present clientele, the more important it is that the management look to price reduction as a means of expansion by opening up new areas of demand among the lower income groups.

Another alternative which may present itself to the practical executive is to put some of the declines in cost due to improved technology into service of a physical sort, either at the time of sale or afterward. This may include the setting up of extensive repair and maintenance facilities and sometimes entails the establishment of a multiplicity of branch offices, warehouses, and servicing points. Or the bid for larger business may take the form of gadgets added to the article at relatively minor expense but calculated to attract the interest of the buyer and thus to maintain or expand sales.

Still another alternative to price reduction which the price-maker is likely to consider, particularly as a means of reaching low-income groups, is the granting of longer terms of purchase. Instalment selling has been expanding in recent years and has shown considerable efficacy in inducing persons of moderate means to purchase additional goods. In spite of the undoubted potency and usefulness of the instalment selling of durable goods which must be purchased in large lumps, such as houses and automobiles, it is evident that it does not directly enlarge the consumer's ultimate purchasing power.¹⁴ In fact, it increases the ultimate cost of the article, since the financing charge must include not merely interest but also the added cost of service and of losses on units not eventually paid for, which the seller must repossess at a loss.

A slightly different analysis suggests itself with reference to a kindred device which has shown considerable growth in recent years. This is the "trade-in." Obviously, aiding the prospective buyer to realize cash or its equivalent on a piece of property to be superseded by the new purchase tends to facilitate the sale. A second question, however, immediately arises. What becomes of the article traded in, and of what significance is this to further stages of the economic process? In our discussion of automobiles, we have already referred to the fact that this practice permits of passing damaged but still usable articles on into the hands of lower and lower income classes until all the values have been made available (sometimes even beyond socially desirable limits of safe-

¹⁴ It does not enlarge his money income, but does quicken current buying, as other credit operations do, by anticipating the future. If this becomes a factor in maintaining employment, it of course does in the end help to create a larger total of purchasing power.

ty). If the trade-in allowance is kept closely in line with the commercial value at which the used car can be resold, the used-car market is coordinated with the rest of the automobile business. As promotional effort increases, however, the tendency is strong to make the trade-in values exceed this figure, in which event, it becomes a virtual reduction in new car prices. Is this a socially more or less desirable price adjustment than a lower price scale and lower trade-in values?

The answer to this question involves many complications, but a few significant points may be suggested. If the trade-in value of a car in the high-price group, taken in exchange for a new car, is high and the dealer recovers all or nearly all of it from the used-car buyer, the effect is to make the price burden lighter on the more well-to-do purchasers and heavier on those in the lower brackets. If, on the other hand, the trade-in value of a car in the hands of the second, third, or fourth user, so worn as to entail high cost of operating and upkeep and so decrepit as to be a traffic hazard, is higher than its realizable value, it would stimulate the substitution of a safer and more economical vehicle, while any value still residing in the old one is salvaged through the junk yard.

In recent years, the trade-in practice has been extended to include many smaller articles, such as radios, gas stoves, washing machines, and even lawn mowers. The practice appeals so strongly to the "horse-trading" instincts of large numbers of consumers, and so alleviates their constitutional distaste for writing off as total loss a piece of equipment that still runs, as to have possibilities worthy of study in the strategy of the market. It has even been proposed that "forced obsolescence" could be prac-

ticed as a stabilizing and quickening factor in the modern industrial field. Some states and cities have made an approach to such a course with reference to automobiles through compulsory liability laws or rigid inspections which tend to force obsolete equipment out of use. Rather recently, it has been proposed that the government purchase and scrap automobiles above a certain age or mileage or below a certain standard of safe operation. In the housing field, more rigorous condemnation of unsafe or unsanitary dwellings seems to have possibilities of economic usefulness but encounters serious political opposition.¹⁵ The whole matter is simply part of a much larger field of analytical and inventive thinking with reference to prices as a dynamic factor in our present economic system.

Another type of procedure by which the producer may seek to enlarge or hold his market, without resort to price appeal, is the introduction of additional style elements, the frequent change of model or design, or the production of a special size or type of article to suit the whim or prejudice of the individual buyer. Within limits, of course, every one of the procedures we have noted should be a proper concern of the manufacturer, whose prime objective is producing goods which will meet the wants of the consumer. It is obvious, however, that this road leads easily to undue multiplication of designs, not in response to any real want of the consumer but by creating fictitious "selling points" to ensnare him. The result is short factory runs, seasonal disuse of plant capacity, frequent re-tooling, excessive inventory burden,

¹⁵ Because of the immobility of a house—as contrasted with an automobile—social considerations somewhat hinder the passing of the better class of houses downward to successively lower income users as is done with automobiles through the used-car market.

and loss of many of the economies of mass production, standardization, and specialization discussed in preceding chapters. We can here no more than put the matter in its perspective in our general discussion. Elsewhere we have occasion to note how business executives, either individually or in more formally organized ways, seek to avoid its pitfalls.

All these alternatives, though entitled each in its place to the careful consideration of the business man, should be carefully traced through to their ultimate effects and not used merely because they dodge his constitutional dislike of price reduction. There can be no doubt that in many cases they have resulted in self-delusion. The seller has by these means kept up a false front of price maintenance while the added costs or losses entailed in these alternative methods have in fact shrunk his net returns below the level he could attain through lower prices and the resulting larger volume. From the social point of view, the significant thing is that even if one of these alternatives to price reduction maintains the seller's profits for the time being, none of them has the constructive value of enlarging the purchasing power of consumers by making net cost to him lower, thus permitting the maximum degree of market expansion and satisfaction of consumer wants.

Looking back over the practical conditions confronting the industrial price-maker as sketched in this chapter, it may appear that they are so complex and pressing that the business man cannot be expected to rise above them and formulate a constructive policy. Or, were he to do so, it might appear that his general principles would fall before the onslaughts of each day's instant decisions on newly arisen situations. One industrialist who read this

chapter in manuscript said: "In the long run, of course, the more technical and statistical considerations will apply. But we must differentiate here between the long-time and short-run results and bear in mind that there is a tremendous economic urge, almost a necessity, for every manufacturer in his pricing policy to put year-to-year prospects and considerations ahead of the ten-year view."

The existence of such pressure is obvious and if the business man failed to see clearly and weigh fairly these near-term exigencies and adapt his course flexibly to them, he would have but little practical success. At the same time, the young man picked for executive responsibility at thirty-five must have a likely picture in his mind of the corporation as it will be when he lays down his administrative responsibilities and retires at sixty or whenever. The truly great business man is one with pioneer vision who looks ahead a generation to dream of a new or larger business which he can build within his lifetime. To realize that ambition, he needs to consider as broadly as possible the effect not merely of today's decisions on tomorrow's profit, but the wider repercussions of prices over the whole economic structure of which his concern is a dynamic, we might even say a living, part. Truly large success comes only as he really masters the seemingly baffling complications of the daily marketing and operating situation and brings them into line with a constructive plan whose general outlines are held always in view, even though it may need to be modified from time to time.

But however broad the vision of a given executive, in many cases he is not entirely free to work out his price problem to that solution which commends itself to his

own mind as commercially most satisfactory or economically most sound. Often he is constrained by strongly entrenched customs of the trade, the pressures of more formal organizations, or the theories and attitudes of his bankers to follow a somewhat different course. These external controls call for consideration next.

CHAPTER VII

EXTERNAL CONTROLS WHICH AFFECT THE PRICE-MAKER

The personal attitudes or beliefs which the individual business executive entertains on questions in the sphere of price-making do not alone determine the action which in any given situation he will take. For he is always under more or less constraint from persons or forces outside himself or his company. This control or influence may be quite vague and intangible in form, expressing itself as a general practice which members of the group are expected to follow or as an expression of public opinion to which they will ordinarily defer. It may, however, be embodied in a more definite statement of rule or principle enunciated by some formal body set up for the express purpose of guiding and standardizing the business conduct of its members. Though such an association is voluntary in its origin and individuals are free to enter or remain outside as they see fit, social pressure may be invoked to persuade everyone concerned to join and, thereafter, to comply with whatever policies or practices the organization may formulate. Even fines or other penalties may be used to enforce compliance. Sometimes constraints upon the individual price-maker grow out of his dependence on outside sources of funds. Finally, such external controls may take on the rigidity of positive legal prescription or prohibition and be implemented by the regulatory authority of the government.

CUSTOM AND BUSINESS PRINCIPLES

As soon as men begin to do business with each other, they begin to build up a body of practices which progres-

sively win the support and approval of the majority as being practically workable and equitable to the parties concerned. Such customs, found good in practice, made up the ancient "law merchant" by which business men regulated their dealings with one another, and they are still the basis of our common law. But such codes must grow as business conditions change, and so situations currently arising in the process of our industrial evolution constantly give rise to new practices, which business men seek to establish as the approved pattern of conduct.

Some of the customs and rules which emerge for the self-regulation of business are designed to safeguard the quality of goods produced, to discourage deception of the buyer, to prevent sharp practice between members of the business group itself or the exploitation of workers. Others of them, however, are directed toward the conservation of property values or the protection of existing "rights" to income enjoyed by the members of the group itself. It is difficult indeed to find among such rules and practices any which seem clearly designed to promote the introduction of new agencies for the acceleration of economic progress. In the main, it is a struggle between vested interests and the innovator of an efficiency device which appears to lie at the bottom of these efforts to make custom or established practice the basis of self-government in industry. The man whose job or the further use of whose property depends on the continuance of business in a particular groove naturally seeks to ally himself with others who are similarly situated. Together they will support such practices and seek to establish such rules for the conduct of business as will tend to perpetuate for them the position of relative advantage which they have been enjoying.

The "basing-point" method of pricing goods is an

excellent case in point. Pittsburgh was the great center of the early steel business and the Lehigh Valley was the old home of cement manufacture. The concerns whose fortunes were tied up in manufacturing plants at these places, and in the banking, mercantile, and transportation services dependent on them, conceived the maintenance of this geographical organization of the industry to be essential. The transfer of business to new regions was to be retarded as much as possible by making the price of steel the Pittsburgh price plus transportation cost from Pittsburgh to the point of delivery, however close it might be to some other steel plant. Cement prices were to include the freight charge from central Pennsylvania to the remote corners of the country even after actual manufacture had been widely decentralized.

Both these single bases have now given way to multiple basing-point systems, under which an "individual mill base" is at least approximated for a considerable volume of production. It still frequently happens, however, that a mill will "absorb freight" and so compete actively in territory which is tributary to another basing point. Or instead of a straight basing-point system, producers may, acting individually or as a group, "absorb" all or all over a certain amount of the freight in a given zone so that the delivered price for many consumers and perhaps as quoted by many producers will be identical. So long as these practices are entered into by producers acting spontaneously and so long as they have latitude to shade their prices or terms to meet their own needs and the conditions of the market, practically all of these bases for soliciting orders tend to bring actual pricing closer to a condition of individual competition. But to whatever extent such pricing practices are set up by some producers and made effective on others, they circum-

scribe the flexibility of individual action. Any technological or commercial advantage a given producer may develop may not be freely translated at his own discretion into a price designed to expand business.

Selling charges have at times been similarly conventionalized. The custom of handling a product through certain distributive channels is sometimes perpetuated even though a shorter and more direct and economical method has become available. Thus a "brokerage" may be added to the price even when the service of a broker is no longer needed or used. Opposition to the integration of chain store organizations (sometimes including baking or other processing operations) and attempts to keep co-operatives from wholesale buying or from independent or contract manufacture of their own supplies fall in somewhat the same category.¹

Finally, the attempt may be made to conventionalize the whole process of estimating costs or of using them in the figuring of prices. This external control of price-makers may take the form of "educating" them to make certain charges for capital, management, or materials, regardless of out-of-pocket cost or the conditions under which they may be furnished by the producer himself. Such conventional formulas for pricing may arise spontaneously within a given line of business and be disseminated merely through the ordinary conversation and discussion of men in the same lines of business, the only force behind them being the desire to avoid being called

¹ Organized labor has also brought its vested interest in jobs indirectly to bear on the process of price-making. It has insisted that a certain number of workers be retained as a "full crew" for a machine even when it has been so changed in design or operation as no longer to require this number of tenders. We do not mean to imply that such measures of protection are not at times necessary to prevent accidents, impairment of quality of goods or service, or undue physical strain on workers. But it is a factor of external control on which the price-maker is dependent.

names or otherwise made to feel the disapproval of their business associates. To a considerable extent, however, these practices have now been carried to more elaboration of definition or more systematic modes of operation under formal trade associations, sometimes supplemented and sometimes curtailed by governmental agencies. We shall therefore note briefly certain ways in which these processes of price-making have been evolving.

THE TRADE ASSOCIATION AS A PRICE INFLUENCE

It has been the custom, as far back as business chronicles run, for individual business men to draw together in more or less formal associations concerned with common interests of their trade. Practically every such association has had repercussions direct or remote, slight or marked, upon the pricing practices of its members. But during the past twenty-five years the trade association and "industry institute" have taken on a more definite structure and more elaborate patterns of action.² The growth of their functions has made them an increasingly significant influence on price policy.

In a large number of cases the trade association acts merely as a joint agency for supplying the common needs of its members for services, which it can render on this cooperative basis at comparatively low unit cost. Such functions include commodity advertising, publicity and legislative relations, research—both technological and commercial—personnel and labor relations, and finance service.

Several other association activities, though they may be performed in such a way as to have little or no effect on price policy or practices, may be so directed as to exert a powerful influence in this direction. For example, the

² See U. S. Department of Commerce, *Trade Association Activities*; and Simon Whitney, *Trade Associations and Industrial Control*.

credit department of a trade association may limit its activities to gathering information as to the financial standing of buyers, improving standards of credit extension, and expediting collection. But it may pass over into such modification of the terms of settlement as in effect to create price differentials or to raise or lower the level of actual price. The traffic department may merely collect and distribute rate schedules or compile books of rates and traffic information for the use of its members. Or it may assume a more active rôle, devising or influencing basing-point systems, practices of freight absorption, or special delivery services in such ways as to have significant repercussions on prices.

Finally, there are three types of trade association activity which, although they are founded on service work for members, have such great potentialities for influence on actual prices as to bring them within our examination of price policies and the forces which determine them. These activities relate to the formulation of rules of fair trade practice, statistical activities, and cost accounting work. Around these lines of trade association development considerable controversy has arisen with reference to the form and extent of activities that it is proper or indeed legal for such bodies to engage in. The exchange of statistical information has been advocated as a means of giving the various concerns in an industry a sound factual basis on which to direct their productive and distributive operations and to act wisely with reference to prices. Such action, however, may be developed to the point where the statistical information may be used as the basis for a plan of concerted action to adjust production toward some goal of price maintenance. Similarly, in defining fair trade practice, the representatives of an industry must often give some answer, explicit or implicit,

to the question of how keen a condition of price competition they think it is desirable to attempt to maintain within the industry. In so far as codes of fair competition deal with these matters, it is obvious that they must constitute an external control on the price policy of the individual business executive.

Much the same may be said with reference to cost accounting activities. In their first phase, they appear merely as an educational effort to secure for the business executive a more adequate and accurate picture of the operation of his plant as a means to improving management. But if the association develops standard systems, adopts rules or principles for estimating certain elements of overhead cost or for allocating joint costs, there is an increasing tendency for the price judgment of the individual executive to be superseded by a cost formula. Such formulas in general are designed to keep the price-maker from omitting from his calculation of costs any item or rate of charge for that item which dominant elements in the group wish to see recognized.

It is not our intention at this point to evaluate these activities by which the trade association brings external influence to bear on the action of the individual price-maker. We note, however, that such influences do exist and must be taken into account in our consideration of the actual price-making process. We shall return to some further discussion of their significance in Chapter X.

LEGAL AND ADMINISTRATIVE INFLUENCES ON PRICE-MAKING

It is obvious that whatever the business man does, not only in price-making as such but in all the productive and distributive activities that precede or accompany it, is done within the setting of the general legal structure. The very law by which corporations or other forms of

business organization exist determines the powers which they have and hence the ways in which they function in price-making. There are, however, numerous more specific ways in which government action impinges upon the business man's decisions concerning price policies. A few of the more significant pieces of such legislation need to be mentioned.³

Looking first at federal laws, it may be said that, where drawn to be generally applicable, no effort has been made to dictate what prices should be.⁴ Attention has been centered almost exclusively on the maintenance of competition. The effort in these laws has been to prevent pricing policies regarded as substantially destructive of competitive forces. They have not been made applicable to situations in which the prices charged were regarded as having no such destructive influence.

The Sherman Anti-Trust Act, passed in 1890, was the initial piece of federal legislation having a general applicability to pricing. It prohibits contracts and combinations in restraint of trade and any attempt to monopolize. Its administration devolved upon the federal courts and they proceeded in a series of cases to lay down such definitions of form or action as they conceived to be consistent with the public policy enunciated in the act. While these definitions were not altogether clear or consistent, the significance of this influence in circumscribing the actions of the price-maker is obvious. Some of its applications will be noted in the course of the next two chapters.

Not until 1914 was there any further change in the

³ Any complete analysis of the relationships which government bears to the pricing policies of individuals is far beyond the scope of this study. There is now under way a study by the Brookings Institution of "Government in Relation to Industry" which will include a somewhat extensive and detailed analysis of this problem.

⁴ This excludes the National Industrial Recovery Act and its administration, which is mentioned on pp. 236 ff.

general federal law dealing with pricing. In that year the Clayton Act and the Federal Trade Commission Act were passed. The purpose of the former law was to prohibit more specifically than had been done before, certain practices which it was believed might "substantially lessen competition or tend to create a monopoly in any line of commerce." The Federal Trade Commission Act established the Federal Trade Commission as an agency to supplement the Department of Justice in the administration of the anti-trust laws and prohibited "unfair methods of competition in commerce." A detailed study of the work of the Commission would obviously be necessary to arrive at an understanding of what the Clayton law and the Federal Trade Commission Act have actually meant in terms of price policy. In the earlier cases arising under the act, the Commission's powers were declared by the courts to be considerably more limited than had been anticipated. However, its power to conduct investigations and to issue "cease and desist" orders has created another type of control or influence upon actions of business executives which determine price.

A further modification of the general federal laws applicable to pricing policies was made in 1936 when the Robinson-Patman Act was passed as an amendment to the Clayton Act. This law extended the prohibitions of price discrimination which had earlier been specifically laid down under the Clayton law. It also empowered the Commission to establish limits beyond which discounts might not be given for quantity.⁵ Experience with this law either in its more general aspects or in its specific provisions is as yet too brief to be clearly evaluated. In 1937 there was passed as an amendment to the Sherman Act, the so-called Miller-Tydings law. The essential

⁵ A number of important exceptions limited the applicability of the law.

feature of this law was the stipulation that contracts for the maintenance of resale prices were, under certain circumstances and with very significant limitations, lawful in interstate commerce.

Throughout all this federal legislation, even when related to pricing policies believed to have a harmful effect on competition, the laws have provided not for the fixing of prices by government, but merely that the prices as fixed by individuals should fall within certain limits as to their terms, costs, quantities, and competitors' prices. The NIRA marked something of a departure from this rule. Even though it is no longer in effect, the major changes which it introduced will be examined in Chapter X.

State legislation having a comparable bearing on prices had an earlier beginning than federal law. Prior to the passage of the Sherman Act, state laws relating to monopolies and restraints on competition had been passed by a large number of the individual states. A variety of circumstances has, in recent years, brought about the passage in many states of two types of legislation of significance to those responsible for making decisions on industrial prices. One of these types is commonly referred to as "fair trade laws." The general effect of these laws is to legalize under certain limited conditions resale price maintenance contracts in intra-state sales. They are comparable in intra-state trade to the Miller-Tydings law in the larger sphere. The second general type of state enactments are broadly referred to as "unfair trade laws." These state enactments prohibit certain types of pricing policies, most commonly those relating to price discrimination and "sales below cost."

While in the various states similarity of principle is to be found in both the fair trade laws and the unfair

trade laws, decisions under them and their application to varying trade conditions present a highly complicated situation. Though from the standpoint of the individual price-maker they constitute a factor of external control, they have all been brought into being in response to the efforts of groups which seek to secure under them a measure of protection against the price action which individuals would take if left entirely free.

OUTSIDE FINANCIAL CONTROL

Last of the external controls over corporate management in its rôle of price-maker is that exercised by the banker or financial agency. In the case of many of our industries banker control has undoubtedly acted at times as a check on constructive price and production policies. When an individual creates a company for the promotion of a product of his creative genius (as in the case of Edison, Eastman, Ford, McCormick, Chrysler, Firestone), the spirit which animates its management is likely to be that of developing production and sale of the particular product in such a way as to cause it to serve the wants of consumers to the maximum possible extent. The founder views the company as "his baby" and he is generally interested primarily in rearing it to the largest possible life of usefulness. This motive is often present also where the "enterpriser's" contribution lies in the field of commercial organization rather than of invention or technological development.

Sometimes from the start and generally in increasing measure as industrial concerns grow in size, the owner-manager has to relinquish personal control at least in part to the financiers to whom he must turn for the capital necessary for expansion. Naturally the financing house which undertakes the responsibility of furnishing

funds and floating securities is bound to feel a responsibility for the safety of funds thus invested, and safety must often be secured at the sacrifice of speed. An aggressive policy of successive price cuts designed to expand market, enlarge volume, and lower production costs entails a series of gambles. The stakes are often high, and American industry presents a striking record of large winnings from such moves—of which the consumer has been the chief beneficiary. Losses are also conspicuous and such losses fall chiefly on the owners of capital. The banker's function is ordinarily conceived as primarily the conservation of wealth already won and piled up in tangible form and adding to it by modest but safe increments rather than risking large losses at one point to be balanced by large gains elsewhere. It is natural therefore that he should characteristically exercise an influence against aggressive price reduction.

What is the best mixture between the banker's caution and the promoter's daring is a question which cannot be solved by formula nor always brought to a satisfactory answer in the school of trial and error. It is clear, however, that financial control over industrial managers has a discernible influence toward static policies with reference to price and toward refusal to finance re-equipment which would lower operating cost but render substantial bodies of physical assets obsolete.⁹ An investment house

⁹ Mr. Ford's official spokesman, W. J. Cameron, has stated (*Ford Sunday Evening Hour*, Mar. 7, 1937) that during the last eight years, seven of which were deep depression, that company scrapped perfectly good plant and equipment which had cost 175 million dollars in order to progress to the making of more powerful and more luxurious cars at a price comparably lower than had been available. While such a move is taken in the interest of larger ultimate profit to the company itself, it requires a courageous and far-seeing executive power to take such a step. As Mr. Cameron put it: "A concern mainly intent on money could have kept that equipment in service for years to come. Many antiquated manufacturing exist whose out-of-date machinery and methods are a heavy

might also be pardoned for being cool to the financing of a concern which proposed to introduce sweeping technological changes which would impose severe competition on a company in which the banking house was already heavily interested. In the matter of short-term

charge on the public year in and year out. The equipment scrapped by the Ford Motor Company was not worn out or broken, nor obsolete in the ordinary sense. The power plant, \$20,000,000 worth of which was scrapped, was as good as the day it was built—maybe better, but a more economical system of making power had arrived, and if the company was to give to its product and to its customers and to its employees the benefit that comes only from using the most improved methods, there was just one thing to do. In the Ford Company a thing is obsolete, no matter how good it is, the moment something better appears.”

Obviously, the expression “a concern mainly intent on money” is not to be taken as implying that the scrapping of this equipment was an act of charity on the company’s part. That the speaker meant an executive authority free to look ahead to future profits from efficiency rather than refusing to take an incidental write-off on present property valuations appears later when he says: “People of no business experience and obsessed by an exaggerated notion of the dollar—that is, money-minded people—would declare this a grievous waste. It was not waste—it was economy—it was a great saving. Had the company been money-minded and ‘saved’ that \$217,000,000 [cost of new equipment] by replacing little or nothing new during those eight years, the public would literally have lost it. By the public, we mean everyone who has any connection with the company, everyone who sells it materials, everyone who buys its product, everyone who works for it. Each of these groups would have paid its full share of that \$217,000,000 for the industrial backwardness and bad management—the indolent, unprogressive management that had refused to improve the plant. The company itself would have paid heavily in loss of efficiency, the public would have paid in decreased car values or higher prices, and the wage-earner would have paid in less employment and lower wages. Nothing is ever saved that way. Bad management is always a charge against the public; good management is always a contribution to the public.”

There is pardonable exaggeration also in the statement: “In the Ford Company a thing is obsolete, no matter how good it is, the moment something better appears.” With the rapid tempo of modern technological innovations it is not practicable to re-equip great plants the moment some slight improvement becomes available. This, however, does not lessen the truth of the principle that a piece of equipment is economically obsolete when a saving in operating cost can be effected by using a new device, after allowing for the added investment entailed and any loss involved in discarding the old.

loans likewise, a banker may quite naturally decline to make a loan to finance a venture in price reduction, which involves new promotional expense to expand the market when the small market on a relatively high-price basis is already showing a comfortable profit.

Mr. Ford's grim fight to keep clear of outside financial dependence that he might be free to pioneer new lines of commercial as well as technological experimentation is a conspicuous case in point. Whether it is socially good policy to permit such massing of capital within a giant corporate structure as to give the management complete freedom of action is a question outside our present inquiry. But experience does show that at times the commercial or investment banker's influence is thrown in favor of a static and against a truly progressive price policy.⁷

'The nature of this influence is suggested in a recent appraisal of U. S. Steel policy:

"The Corporation is the leading example of what is known as a 'Morgan company.' . . . It has always been a management with a financial rather than an industrial turn of mind. The all-powerful ruler of the Corporation, Chairman of the Board Myron Taylor, is primarily a financial man and he was found for the job by the late George F. Baker of Manhattan's First National Bank. If there ever was a case of banker influence on management, for good or evil, the Steel Corporation is it.

"At the end of 1934 the Corporation had \$1,600,000,000 invested in plants and properties, the bulk of which were built or acquired a great many years ago. . . . Now there are two possible ways to look at a steel plant or an ore mine. One is as an investment that must be protected. The other is as an instrument of production, to be cherished only so long as it cannot be replaced by a more efficient instrument. The first may be called the banker's point of view; the second, the industrialist's. The Steel Corporation was founded by financiers, has been dominated ever since by financially-minded men. The great question is: how much has it been interested in protecting its investment (which means stabilizing) and how much in making and selling steel (which means pioneering)? . . . The chief energies of the men who guided the Corporation were directed to preventing deterioration in the investment value of the enormous properties confided to their care. To achieve this they consistently tried to freeze the steel industry at present, or, better yet, past levels. . . .

"Outside the Corporation, the steel industry has mostly been run by

But there may also be another type of banker influence over corporate management when the banker turns manipulator. Sometimes such manipulation is in the supposed interest of the corporation, it being held that the maintenance of a certain level of stock values is essential for the credit of the corporation or for the carrying through of certain mergers or other corporate plans. Occasionally, however, financial sponsors, instead of being interested either in service to the public or in the long-run safety of the assets of the corporation, become concerned in making a short-run "killing" in terms of the market prices of its securities. This sort of manipulation was unquestionably more prevalent in the earlier days of corporate development in this country, but even in the boom period which preceded the collapse of 1929, there were conspicuous instances of the identification of officers of corporations and their financial backers with the innumerable pools designed to force up the stocks of given corporations at particular periods.

One of the most disastrous cases of price maintenance under circumstances which indicate stock market influence was the pegging of copper prices during 1929.⁸

steel masters rather than financial men. But the super conservative outlook of the Corporation has been contagious, and the steel masters have in matters of policy acted like bankers. They have preferred to take no risks, to content themselves with modest but safe objectives. They could have seriously competed with the Corporation, trying new methods, invading new markets. But the umbrella of stabilized prices that Gary held over the industry was wide, and the independents found it easy to make a safe and comfortable living under it. It was hardly an atmosphere in which the rugged American pioneering spirit flourished. If of late years there has been an increasing tendency to break ranks, as vigorous new independents have come to the fore, that is another story. The industry still suffers from the heritage of three decades of inertia . . . because their orientation is financial rather than industrial." "U. S. Steel: The Corporation," *Fortune*, March 1936, pp. 63, 170, 173.

⁸ This episode has been set forth in great detail in the official records of a subsequent government inquiry. See 72 Cong. 1 sess., *Stock Exchange*

During no year from 1921 to 1927 inclusive had the price of copper averaged higher than 14.5 cents. For the year 1927 it was 13 cents a pound. As regards the adequacy of a price of about 13 cents, a leading authority on the copper industry,⁹ after examining the annual reports for 1928 of a large number of companies operating copper mines in North and South America, estimated that 72 per cent of their copper (and he thought that his estimates would also be reasonably accurate for total world production) was produced at a cost, after depreciation but before depletion, of less than 10 cents a pound, and 93 per cent at a cost of less than 13 cents.

By the late 1920's one company, the Anaconda, had come to produce about one-fourth of the copper of the United States, and, with its foreign affiliates, about one-fifth of the world supply. The two next largest producers were so rapidly expanding that by 1929 the joint production of the first three companies was 47 per cent of the national total. By the early 30's it was more than two-thirds. In 1926 and 1927 respectively, this rapidly growing concentration of ownership had been supplemented by the formation of two industry-wide organizations, Copper Exporters, Inc., and the Copper Institute, the former under the provisions of the Webb-Pomerene Act. Building on this foundation, it was possible in 1927 to weld the entire copper industry of the United States and the world into one entity so far as price-making was concerned.

Practices, Hearings on S. res. 84 before Committee on Banking and Currency, Pts. 2 and 3; the same, 2 sess., Hearings on S. res. 84 and S. res. 239 before Subcommittee on Banking and Currency, Pt. 6.

⁹ A. B. Parson, *Engineering and Mining Journal*, June 8, 1929.

All yearly and monthly copper price quotations in this section are those of U. S. Bureau of Labor Statistics.

No sooner had this unity been achieved than prices began to move up. As against a 13-cent average for 1927, the figure for 1928 rose from 13.9 cents in January to 15.8 cents in November and December. By March 25, 1929, it reached 24 cents. Sales of copper abroad had, however, begun to fall off as the price passed 14 cents; and the copper men themselves recognized that a price of 24 cents was too high. It was, they claimed, forced on them by a market which anticipated a shortage. However this may be, from April 1929 through March 1930, not budging one iota in the face of general business collapse, they pegged the price of copper at 17.8 cents a pound.

In April 1930, the price broke and by October it was under 10 cents. In 1931, the average price was 8.1 cents—more than a cent less than the previous low of 9.5 cents in 1894. In December 1932 it reached an all-time low of 4.8 cents from which it climbed slowly back to 9.5 cents in 1936. In the light of what ultimately happened, and in view, indeed, of conditions as they were known to exist at the time, the raising of the price of copper to 14 cents and above, and particularly its pegging at 17.8 cents for the whole year ending in April 1930 represented not only a disruptive but an almost suicidal policy on the part of those who developed and exercised the power to determine copper prices. At 24 cents a pound, practically all trade in copper had ceased.

The price of copper was raised and kept up precisely at the time when, owing to the coming into production of low-cost Mexican, South American, and African mines, and an increase in the output of by-product copper in Canada, the price should—if the public was to participate in the gains from technological advance or from cost reduction obtained in other ways—have been

lowered.¹⁰ The price boost had the effect of stimulating the development of high-cost properties in the United States, properties which should have lain dormant, and thus of aggravating rather than ameliorating a condition of over-development which would in any case have been serious. The industry's program of fixing prices at 25 per cent above their previous level and a good 80 per cent above their post-depression level, was adhered to for six months after acute depression had begun to destroy the basis of demand and give clear warning that the time had come to cultivate markets in a realistic way.

No doubt various circumstances and motives accounted for this high-price policy so recklessly pursued. But it seems significant that there was in 1928 and 1929 a vast amount of collaboration between management and banking interests in promoting the sale and even the speculative manipulation of the stock of the Anaconda Copper Company.

There is evidence¹¹ that the Copper Exporters as a

¹⁰ A comparison of typical copper production costs in 1929-30 with "costs that could be obtained in exploiting the identical ore body with wages and supply costs as they prevailed in 1929-30, but using the best technique of mining, concentration, and smelting that was known in the period from 1912 to 1915" shows a reduction in per pound cost of over 50 per cent, according to an analysis in Parsons, *The Porphyry Coppers* (cited in Elliott and others, *International Control in the Non-Ferrous Metals*, p. 543).

¹¹ On Oct. 29, 1928, the directors of Copper Exporters, Inc., the price of copper then being 16.25 cents, authorized the issuance of a statement which expressed the belief that buyers were contracting in excess of their requirements. If buyers would refrain from doing this, the statement declared, mine production would be sufficient to meet the demand.

While the export association at this time appeared to be trying to hold down copper prices, the whole upward swing was largely due to the activity of the association in curtailing dealer stocks. The association was therefore merely endeavoring to put a brake on a price rise which they had themselves started in motion and, indeed, for which purpose, at least in part, they had been organized.

body were only contemplating a price advance to 15 or 16 cents, which though apparently unwarranted by production costs, was less extreme than the price policy which was eventually enforced. Following October 1928, however, the National City Bank and the management of the Anaconda Copper Company were engaged in a long series of operations in copper shares, partly for the purpose of strengthening the capital structure and extending the control of the company, and partly for the sake of speculative profits, which operations could not have been handled so successfully—if indeed they could have been carried through at all, except by the maintenance of high copper prices.

The National City Bank had acted as the banker and financial ally of the Anaconda Copper Mining Company ever since the latter's incorporation and first financing in 1895. Prior to the time of which we are speaking, they had at one time or another sold to the public an aggregate of \$210,000,000 of the company's fixed maturity obligations. When in early 1928, the National City Bank and its security affiliate, the National City Company, established a special fund for investment of the institution's own funds in stocks, one of their first steps was to purchase 50,000 shares (\$50 par) in Anaconda. A further bond linking the two companies was the fact that John D. Ryan, chairman and largest individual stockholder of Anaconda, was on the board of the bank; and in May 1929 Charles E. Mitchell, chairman of the bank, was made a director of Anaconda. Percy Rockefeller was a third director in both institutions.

From the time when National City made its first purchase of 50,000 Anaconda shares, the bank had some speculative interest in the company and industry. For

though the original purchase was presumably purely an investment, the bank from time to time bought additional stock when the price was low (up to 208,000 shares at one time), and sold when the market went up (its holding at one time being as low as 38,000 shares). Though National City's previous relations with Anaconda had not, therefore, been entirely free from speculation, the bank's first major effort to support the price of copper shares—and hence the first extensive stake which it, and several officers of copper companies who now became partners in its operations, had in upholding copper shares—started in December 1928.

The operations then undertaken were in securities of the Andes Copper Company, an Anaconda affiliate, and were designed to induce conversion of that company's bonds into stock and this in turn into Anaconda stock. There were similar deals in the Greene-Cananea and Chile copper companies. Weakness or erratic behavior on the part of stock prices at this time might have most seriously complicated consolidation plans, and also have plunged the companies and their active heads personally into great losses, instead of yielding, as matters were actually managed, company and personal profits aggregating some millions of dollars.

In addition to these market operations which were designed primarily to facilitate certain mergers, the National City Bank and Anaconda became deeply involved, as the summer of 1929 approached, in a program of retiring Anaconda bonds, the total amount at stake between December 1928 and December 1929 (including some conversions in connection with mergers already mentioned) being 211 million dollars. This meant the flotation of an enormous amount of new Anaconda stock,

either through conversion operations or outright sale. The whole situation was further complicated by private pool operations carried on in part by individuals high (though not at the very top) in the control of National City and Anaconda, which operations had no other purpose than to make huge profits through the boosting of Anaconda stock prices to the highest possible level.

Finally, from August to October 1929, National City sought to liquidate the whole pool situation by getting a large volume of Anaconda stock into the hands of small permanent investors. Clearly, however, the amount which customers would pay for Anaconda stock would be intimately related to the price of copper. Mr. Mitchell, the Board chairman, subsequently asserted that the fluctuation in the value of copper shares "comes almost entirely in sympathy with two factors: one, the price of copper, and, two, the volume of the consumption of copper." Referring to changes in the price of copper taken by itself, Mr. Mitchell thought that a difference of a cent a pound in the price of copper meant a difference of roughly \$1.25 a share in the value of Anaconda stock (or 3 per cent of its \$50 par).

It is natural that the powerful National City Bank and Anaconda interests, while marketing vast quantities of stock and even afterward, would view with great foreboding any proposal to lower the price of copper even to the point which the Copper Exporters, Inc., themselves had officially declared was all that copper should bring. We have no way of assessing the strength of the pressures for price maintenance coming from other sources. But clearly the situation which has been described in considerable detail above was far from healthy, and must have been no small element in that stubborn

refusal on the part of the copper group as a whole to make any concession in the face of appalling conditions of over-development and over-supply which soon developed. Those who held the key position in the interlocking structure of the copper industry had given themselves and their money, their reputation and whatever power they could muster, as hostages for the continuance for some time of well over double prices for copper stock. And these high stock prices certainly could not be maintained without very high prices for the metal itself.

This single case will perhaps serve to illustrate the way in which under modern methods of finance capitalism the business policies of companies may be warped by forces remote from the factors which normally determine prices. It would not seem that price policy can be socially conceived when executives or directors have an active if not dominant interest in window-dressing the market for securities by making prices contribute to short-run earnings rather than long-run efficiency and development.¹²

¹² “. . . professional general executives . . . were forced to recognize obeisance to banker control. Many of them during the 20's protested against this banker control, which tended to undermine executive efficiency. They were egged on to produce profit on the heavy and often excessive manipulative capitalizations. This engendered, on the one hand a hectic, high-pressure selling era, including strong reliance on rapid changing of models and on instalment selling at uneconomic rates, intense intra-industry competition, a dubious margin of questionable advertising and distribution tactics; and on the other hand a repressive, uncreative point of view as to broad policy. . . . The spirit of speculation had penetrated to many professional general executives who violated the strict codes which should govern them as to fiduciary responsibility. As ‘insiders’ they used their positions to enrich themselves by speculation in the company's stocks, by excessive bonuses and salaries and by favoritism to dummy supply companies.” J. George Frederick, *For Top-Executives Only*, pp. 21-22.

CHAPTER VIII
THE LARGE CORPORATION AND PRICES
—EARLY PERIOD

In the public mind, the growth of giant corporations has long been looked upon as the most serious threat to the attainment of prices as low as are consistent with necessary costs. New force has recently been given this view through attacks on "big business" made by both congressional and administrative leaders. The analysis presented in the last four chapters has called attention to the complex interplay of technological and organizational factors in the present-day process of producing and selling industrial commodities. Attention has been called to the fact that at many points the attainment of high efficiency in the use of modern industrial techniques calls for large units of organization. In this chapter and the one which follows, we shall examine concretely certain problems of price adjustment which have arisen concurrently with the development during the last half-century or so of very large companies, assuming a more or less dominant position in their respective fields.

THE EMERGENCE OF "BIG BUSINESS" IN THE
UNITED STATES

The development of great industrial corporations may most conveniently be thought of as having taken place in two major periods, the first extending from the rise of the Standard Oil combination in the 70's to the "trust busting" days of 1904-11, and the second emphasizing war and post-war developments.

The number of great concentrations of capital effected before the late 90's was comparatively small. Aside from Standard Oil, the chief big companies, or tightly knit business groups, of that day were the National Cordage,

Diamond Match, National Starch Manufacturing, American Tobacco, American Sugar Refining, National Lead, U. S. Rubber, General Electric, U. S. Leather, and National Cash Register companies, and the cotton-seed oil, linseed oil, and whiskey trusts. Some of the companies named above were preceded by pools or trusts and there were also various short-lived pools not named.¹

Though the sweep of the "trust" movement was not wide enough, up to the late 90's, for it to constitute anything approaching a prevailing pattern for the organization of American industry, some of the consolidations were so important individually and roused so strong an "anti-monopoly" sentiment as to result in the passing of the Sherman Anti-Trust Act in 1890 and numerous similar state laws. The deterrent effect of this legislation, and of the severe business depression that followed 1892, caused a suspension of the consolidation movement for some six or seven years.

With the industrial revival of the late 90's, however, the drive to consolidate competing companies took on the proportions of a tidal wave. A trickle of mergers occurred in the years 1895-97 and 1903-04, but nine-tenths of the consolidation movement between 1895 and 1904 occurred in the five-year period 1898-1902. A list of over one hundred industrial consolidations, each involving capitalization of 5 million dollars or more, effected during these years is presented as Appendix C. To anyone familiar with American manufacturing and allied industries, this list is more eloquent than any description or statistical summary could be as evidence of the sweep and vigor of the consolidation wave. Seager and Gulick²

¹ Companies like Carnegie Steel have not been listed since the industry remained highly competitive, though the individual concern was large.

² H. R. Seager and C. A. Gulick, Jr., *Trusts and Corporation Problems*, p. 61.

(speaking of manufacturing industries only) have estimated that the total capitalization of what they would classify as "trusts" amounted in 1904 to 5 billion dollars—or two-fifths of the aggregate capitalization of all manufacturing as of that period.

This phase of the consolidation movement in American industry came to a stop rather suddenly. One cause of its arrest was that so large a proportion of the part of industry that was open to consolidation had by then been reorganized. Another was that the financial results following mergers in almost all cases proved to be far less satisfactory than had been anticipated in the hectic period when promotions were the first order of the day. A more positive reason for the almost complete cessation of activity of this kind was, however, the anti-trust campaign which was at this juncture launched by President Theodore Roosevelt.

The effect which the legal attacks begun at this time had on corporations and their price policies will be reserved for consideration in the next chapter. Here, it is important that we note the effects on the corporations themselves as well as on the public which resulted from the drive to establish absolute monopolies in a great portion of American industry and to charge all that the traffic would bear. Since the Standard Oil Company was the first and most influential of the trusts, it will serve as our principal illustration. Briefer attention will then be given to different kinds of results which followed in some other cases.

EARLY ATTEMPTS OF THE STANDARD OIL COMPANY TO MAINTAIN HIGH PRICES

Although the firm of which John D. Rockefeller was then a member made its first small investment in an oil

refinery in 1862, it was not until 1872 that the Standard Oil Company of Ohio became of national importance in the oil industry. Early in 1872, as a result of an extraordinarily discriminatory contract with the railroads, the company was able to buy at its own figure almost all of the twenty-six somewhat smaller refineries in Cleveland. This increased the size of the company seven-fold, and brought its refining capacity to more than one-fifth of the nation's total. Mr. Rockefeller thereupon set up under his presidency a Petroleum Refiners' Association, which controlled 80 per cent of the country's refining capacity (including, of course, those refineries which Mr. Rockefeller and his associates owned directly); and thus the Standard for the first time found itself in a position in which it could for a while name whatever price it chose for its products.

Until this control was set up the margin³ between the prices of crude and refined oil⁴ had been descending quite rapidly and steadily from 45 cents per gallon in 1864 to 14 cents in 1871. Most of this decline marked a natural competitive response to the improvement in techniques,

³ In most of the examination of prices which follows, it will be preferable to speak of the margin between the price of crude and the price of refined oil, rather than in terms of the price of either taken by itself. Throughout most of the period under discussion, the prices of crude oil were declining, sometimes precipitously, and these changes were naturally reflected in the price of the finished products, thereby obscuring those elements in price which reflect charges made by processing and distributing concerns for the services which they render. It is this latter issue in which we are primarily interested, and the figures for margins afford the best index of what was taking place.

⁴ As there is no satisfactory price series for oil destined for consumption in the United States prior to 1881, the prices and price margins referred to will, unless otherwise specified, always relate to export oil. Export oil, though not of as high quality as domestic oil, was throughout the period with which we are mainly concerned in the present review the major product of the refining process.

Price quotations to 1899 are from *Oil City Derrick*; beginning with 1900, from *New York Commercial*.

transportation facilities, and distributive organization. Beyond this, however, it seems clear that the profit margins of refiners likewise had, as capacity multiplied, been much reduced from what had originally been a very high level. The Association in 1872 was not willing, however, that this normal liquidation of their high profits should take place.⁵ Between June and November 1872 it raised the price of oil from 23 to 27 cents. The gross margin of refined over crude was increased from 13.6 cents to 17.7 cents; and profits, which in 1871 were about 1.25 cents a gallon, rose by November to 4 or 5 cents a gallon—around \$2.00 a barrel.⁶

There is every reason to believe that it had been intended to go much farther than this in raising prices. The Refiners' Association, in order to forestall opposition among the producers had, however, promised to buy crude on a \$5.00 base.⁷ This caused such a flood of oil as to break the price and caused the dissolution of the producers' organization and the loss of any aid which

⁵ "The refiners had become accustomed to making from 25 per cent to 50 per cent, and even more, on every gallon of oil they put out. They had the same extravagant notion of what they should make as the oil producers of those early days had. No oil producer thought in the sixties that he was succeeding if his wells did not pay for themselves in six months! And as their new industry slowly but surely came under the laws of trade, increased its production, was subjected to severe competition, as they saw themselves, in order to sustain their business, forced to practise economies and to accept smaller profits, they loudly complained. There was never a set of men who found it harder to accept the limitations of economic laws than the oil producers [and refiners] of Pennsylvania." Ida M. Tarbell, *History of the Standard Oil Company*, Vol. II, p. 196.

⁶ A refiner who quit business in 1873 later testified before a congressional committee that with a profit of 10 cents a barrel he could have made a 12 per cent return on his capital. Another concern, whose profit was 34 cents a barrel in 1875, in that year cleared \$40,000 on an investment of \$65,000.

⁷ Oil was selling at \$4.00, when formation of the Refiners' Association was begun, and at \$3.475 by the time it was ready to function.

it might have given. The high price of refined oil, moreover, caused a falling off in export sales. Finally, many of the refiners so persistently violated their quotas that, after about a half year of declining effectiveness, the Petroleum Refiners' Association was dissolved in June 1873.

Control by voluntary cooperation among independent companies having failed, the Standard Oil Company turned to purchase or absorption by contract. By 1876, it controlled 90 per cent of the country's refining capacity, and was able to give its policy of price raising a more thorough trial. Between June and December 1876 the price was raised from 14.75 cents to 29.13. The refiners' margin in 1876 at one time reached 20 cents—compared with 10 cents, which it had averaged for the last two years. In 1877, the Standard Oil Company paid a dividend of \$3,248,650.01 on its capitalization of \$3,500,000; and one of its stockholders later said on the witness-stand that they might have paid the dividend twice over and had money to spare.⁸

The advance in prices, however, made the exporters and foreign purchasers angry, and in time began to undermine the market both at home and abroad. The advance in prices stimulated foreign refining and the resort to shale oil. At home, it led to public denunciation of the "petroleum plot," threats to substitute gas for illuminating oil, and the growth of rival refining and pipe line interests. By 1879, under the combined effect of opposition by exporters, consumers, and crude producers, together with competition from within the industry, the margin of the refiner, which had been raised from its former level of 10 cents to 20 cents a gallon, collapsed to 5 cents.

⁸ Tarbell, *History of the Standard Oil Company*, Vol. II, p. 201.

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But the Standard Oil Company continued its policy of high prices. It exerted every effort toward laying the foundations of what was to be the company's nearest approach to a 100 per cent monopoly. The beginning of 1880 saw Standard in control of 95 per cent of the total refining capacity of the country and ready to embark for the third time in its career on a major price-raising campaign. In June, the price of refined was advanced a full 2 cents (to 9.625), although there was at this time no excuse in the way of a rising price of crude. In September, with crude still low, refined oil was advanced to 10.625 cents and in October to 12 cents. This brought the refiners' margin to more than 9 cents a gallon, or double that of the preceding year.

But reaction to this advance of price was more prompt and decisive than at any previous time. Exports fell off, remonstrances were made from foreign markets to our State Department, foreign refining was stimulated; while at home the Tidewater Pipe Line Company which had escaped destruction when its principal refining outlets had been cut off now built new plants and was again in a position to compete in the domestic market. Prices were brought down just about as hastily as they had been raised. This debacle apparently marks the end of the extreme high price policies of the Standard Oil Company. In the words of Miss Tarbell:

Again and again the effect of the experiences of 1872, 1876, and 1880 crops out in the testimony of Standard officials. Benjamin Brewster once said to a federal investigating committee, which had asked if the Standard could not fix the price of oil as it wished: "At the moment many things may be done, but the reaction is like a relapse of typhoid fever. The Standard Oil Company can never afford to sell goods dear. The people would go to dipping tallow candles in the old-fashioned way if we got the price too high." The after-effects of the first great raids,

then, were salutary. The Standard learned the limitations set on monopolies by certain great economic laws.⁹

AN ATTEMPT AT PRICE STABILIZATION

Following 1880 there was a smoother course of prices and less turmoil in the relations between the producers of crude oil, the refiners, and the consuming public. Owing in part to an agreement which had been reached with the crude oil producers when the latter called off a suit for criminal conspiracy brought against the leading men in Standard Oil, and in part to the slowly rising tide of popular opposition to monopoly, the Standard Oil group no longer dared to go as far as formerly in driving out all competition. Their control of refining, after the first year or so of the new decade, seems usually to have been closer to 80 per cent than the 90 per cent of 1876 or the 95 per cent of 1879-80. However, the Standard high command went much farther towards destroying competition than would be tolerated by present law and public opinion. In particular, it took care to see that such competition as did exist was carried on under handicaps which made it possible for the Standard itself to sell at very remunerative prices. The trust's transportation advantages and competitive methods enabled it to maintain for a good ten years a level of prices which yielded profits little, if any, below those enjoyed at the close of the 70's. It seems probable that even less was accomplished in the way of passing on to consumers the benefits of technological progress than had occurred in the more violently grasping but less prudent 70's.

The maintenance of prices during the 80's was accomplished in spite of the fact that it was in these very years that many of the most spectacular improvements were made in the technique of handling and refining oil. It

⁹ The same, p. 206.

was early in this period that the building of pipe lines from the oil regions to the seaboard introduced such revolutionary economies into the handling of oil that John D. Rockefeller himself declared: "The entire oil business is dependent upon this pipe line system. Without it every well would shut down, and every foreign market would be closed to us." It was in this period, too, that the Standard combine claimed to be introducing many economies which it said could come only from concentration of the oil business under one management. Markets were materially extended, by-products developed. Exports of illuminating oil increased from 365 million gallons in 1879 to 455 million gallons in 1889; and of lubricating oil from 3 million to 24 million gallons. The waste of oil, formerly as much as 10 per cent, was reduced until practically all the oil was utilized. What happened in the early 90's is a pretty clear indication that there had developed in the 80's a very substantial disparity between the costs of producing petroleum products and the prices at which they were sold.

NEW FORMS OF COMPETITION IN THE 90'S

Beginning in the last year of the 80's, but to a much more pronounced degree after 1891, three forces were instrumental in bringing the price of oil much closer to the cost of production. By far the most important of these was the growth of Russian competition. The Russians had been slow to develop their great Caspian deposits, but they became, in this period, the pioneers in the use of improved organization and methods. In particular, it was they who introduced that major advance in ocean transport of refined oil—shipment in bulk—first into England, and then, together with their English associates, into the Far East.

A second strong element of competition grew out of

the enterprise shown by a German firm. Starting in 1888, this firm (with offices in New York City) erected large storage tanks and oil plants in Rotterdam and Bremerhaven, established a smaller storage depot in Mannheim, and took steps to extend their supply stations in Germany and Switzerland. They built tank steamers in order to ship their oil in bulk. They also allied themselves with certain independent refiners and interested themselves in a cooperative movement which was then emerging among American crude producers. The Standard trust regarded this threat as of sufficient seriousness so that it not only lowered its price, but followed the German company to Rotterdam and there put up a plant of similar character.

The third attack on the Standard's control over petroleum came from domestic rather than foreign sources. This was the cooperative movement among certain producers, by which they themselves went into refining and the necessary auxiliary services. After failing to secure from the Pennsylvania legislature some impractical legislation to "punish" refining corporations, these producers turned during the early 90's to the construction of an independent pipe line, the operation of their own refineries, and the use of tank steamers and foreign distributing agencies to connect them with the export market.

As early as 1892, a "Producers' Protective Association" had set up three operating units, the Producers' Oil Company, the Producers and Refiners' Company, and the United States Pipe Line. By mid-1893 they had developed enough transportation, as well as producing and refining facilities to enable them at least to put up a fight. Alone they would probably not have had a large influence on the Standard price policy. But when

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Standard found itself confronted also by the activity of the Germans, and especially the growing Russian competition, it progressively cut its margin on refined export oil from somewhat over 5 cents so that by late 1894 it was a bare 3 cents.

This extreme price-cutting failed, however, to eliminate the independent oil interests. A first easing of the situation for the independents came towards the close of 1894 when, after about two years of prices so low that they had lost money on every barrel of oil shipped abroad, and especially vicious price-cutting and price discrimination in every German market which they reached, the German government took steps to end the latter practice. At about the same time, the Standard, itself wearying of the cost of the long war, raised the export margin from the impossible 3 cents to 4 cents—at which level it remained for the next three years.

FAILURE OF LIMITED COMPETITION TO BRING LOW OIL PRICES

After eleven years of struggle the cooperative movement described above emerged as the Pure Oil Company, the first completely integrated independent; and thus in a small way there had begun that development which was ultimately to give the country a considerable number of strong independents. In the world outside the United States the Russians had so increased their sales that they now supplied a substantial instead of a small portion of world demand. In some important markets, indeed, their sales volume already exceeded that of the Standard. Competition was therefore getting a permanent foothold in oil.

Yet during the late 90's and early 1900's there was a great increase rather than a decrease in price margins. A

weighted average covering the four most important products showed a spreading of the refiners' margin from 6.5 cents in 1898 to 8.8 cents in 1903, an advance of 36 per cent.¹⁰ There was, indeed, some increase in operating expenses during this period (prices generally were rapidly rising); but the Bureau of Corporations concluded that the increase in the operating expenses in oil refining did not exceed 10 per cent. The earnings of the Standard Oil Company which had averaged 15.1 per cent on invested capital from 1882 to 1892, and 21.1 per cent from 1892 to 1900, rose to an average of 25.2 per cent from 1900 to 1906.¹¹

The fact that prices were so much higher and that Standard made so much more money after it had begun to share the market with competitors than when it was using every means to keep such competitors out, is of course partly explainable by the fact that as yet the absolute size of that competition was small. In 1904 the Standard with its affiliated concerns was still handling 84 per cent of the crude oil run through refineries in the United States; and as respects the Russian oil, there were of course many markets where this competition could have no direct effect on prices. It had, indeed, by this time been established that a sufficiently determined group could enter the oil business in the United States. But considering the enormous handicaps and perils and the many years of struggle which the Pure Oil Company encountered before it gained its assured place in the industry, it is not surprising that the entry of independent interests was as yet so slow as to have but small effect on

¹⁰ *Report of the Commissioner of Corporations on the Petroleum Industry, 1907, Pt. II, p. 10.*

¹¹ *Standard Oil Company of New Jersey et al. v. United States.* In the Supreme Court of the United States, Brief for the United States, Vol. II, p. 11.

prices. Having once run the gauntlet and obtained a foothold in the industry, it is clear that an independent group, whether they entered into a working arrangement with Standard as did Tidewater, the first independent to survive, or kept their freedom of action as did Pure Oil, would nevertheless profit by high prices in the same way as did Standard. As late as 1917, the Federal Trade Commission stated:

To be sure, three or four large competitors exist; but the history of their operations appears to indicate that after a preliminary competitive onslaught in which a fairly satisfactory amount of business is gained, they "dig themselves in," to use a military metaphor, and thereafter "follow the Standard market."¹²

This brings to a close our consideration of the earlier history of oil price-making, for in 1906 the Standard Oil Company was formally charged with violating the anti-trust law, and was (in 1911) the first great trust to be dissolved. The subsequent history of oil will be discussed in the next chapter.

EARLY MONOPOLIES IN OTHER COMMODITIES

With respect to the dozen or so other major industrial consolidations which were effected prior to the late 90's, authorities agree that in most cases they followed the principle of charging all that the traffic would bear.

The Diamond Match Company was organized in Connecticut in 1880 for the purpose of acquiring all the factories in the United States manufacturing friction matches, with the intent of monopolizing the business and controlling prices.¹³

Immediately after the formation of the whiskey trust, in 1887, prices were cut for a time, in order, as the organizers of

¹² *Report on the Price of Gasoline in 1915*, p. 160.

¹³ Eliot Jones, *The Trust Problem in the United States*, p. 315.

the trust did not hesitate to say, to force their competitors into the organization; but within a few months, the rivals having been largely bought up or destroyed, the profits, as shown in 1888, became very large. These profits stimulating competition, however, it became necessary at the beginning of 1889 to cut prices again very decidedly, in order to force rivals into the combination.¹⁴

Mr. Taylor, the secretary-treasurer of the Standard Rope and Twine Company, says that [its predecessor] the National Cordage Company feeling that it largely had control of the market, pushed the prices higher, both of the raw material and of the finished product, than the conditions of business would warrant. It put the price of hemp as high as 15 or 16 cents a pound, being anxious to secure complete control.¹⁵

In October 1887, the [sugar] "trust agreement" became effective and the margin [between the price of raw and of refined sugar] rose from three quarters of a cent per pound to one and a quarter cents. . . . The high margin of 1888, however, speedily attracted new competition, and as a result the margin fell in 1890 to an even lower figure than during the 80's. In 1892, the trust, through the acquisition of a number of competitors, secured nearly a complete monopoly of the sugar refining industry; and the margin was considerably advanced once more. As before, this induced new competition, as the result of which the margin fell below the cost of refining. Upon the acquisition of several competitors in 1900, prices and margins again went up; but this led to the construction of competing refineries, and in 1904 the margin again declined. Taking therefore the first eighteen years of the life of the trust—the margin after 1905 indicates the existence of competitive conditions—it appears that sugar prices were low when competition was present, and were advanced when competition was absent or brought under control. The conclusion seems to be justified that the trust made for high prices, and that it did little if anything, to steady them.¹⁶

¹⁴ Jeremiah Jenks and Walter E. Clark, *The Trust Problem*, p. 142.

¹⁵ *Report of the Industrial Commission, 1901*, Vol. XIII, p. xix.

¹⁶ Jones, *The Trust Problem in the United States*, pp. 262-63.

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The price story of the American Tobacco Company is less clear and simple. The company was formed in 1890. The net price of cigarettes declined rather steadily from 1893 (the first year for which price data are available) until 1899 and then advanced rapidly until 1910. These changes, however, largely reflected costs, and profits did not vary greatly over the whole period. They were, however, maintained on a distinctly profitable level. In its plug and snuff business, drastic price-cutting was resorted to by the company, not for the purpose of benefiting the consumer but as a means of driving competitors from the field. After the entrance of the trust into the plug tobacco field, prices and profits rose sharply, and the same was true for smoking tobacco and snuff. The possibilities of control over tobacco product prices was somewhat limited by the fact that the trust did not have control over raw material, that heavy excise taxes entered into the picture, and that the possibility of introducing machine economies into the manufacture of cigars was so limited. However, the tobacco trust, with its use of "fighting brands" and local price-cutting for the destruction of competitors and its drastic advance of prices in fields where it was able to secure control aroused much popular resentment. Investigation by the Bureau of Corporations gave publicity to these practices as well as the fact that high profits were earned by the corporation. Prosecution under the anti-trust laws led to its dissolution in 1911 in accord with a ruling of the Supreme Court handed down immediately following the Standard Oil decision.

On the whole, the motives and policies which characterized the earliest combinations also represented the aims of those who brought under industrial consolidation so large a proportion of American industry in the

years around 1900. "The primary explanation of the trust movement, notably that characterizing the period from 1898 to 1903, would appear to be the desire of the manufacturers to restrict or eliminate competition and thus to establish monopoly price."¹⁷ Though they often fell far short of reaping any considerable measure of the monopoly profits which they sought, the widespread efforts on the part of business leaders to raise prices, and to do all the other things which they thought were necessary if this end was to be accomplished, constituted, we believe, one of the reasons why the American standard of living did not advance more rapidly between the 90's and the time of the World War.

THE WINDOW GLASS MERGER

An interesting illustration of the complications which follow temporary success in raising prices by monopolistic methods may be drawn from the history of the American Window Glass Company. Formed in 1899, it took over the business of twenty of the largest concerns in the trade, having about 85 per cent of the country's productive capacity. The original expectation of profit, it soon became clear, rested not on any prospect of increasing efficiency, but on a strategy of discouraging competitors and artificially holding up prices. After several years of trial this program was not, however, giving very satisfactory results. It seemed a happy circumstance, therefore, when in 1903 the company was able to secure the newly issued patent for a machine

¹⁷ The same, p. 260. The author adds: "Whether this competition that it was desired to eliminate was 'ruinous' in its nature is a question we have analyzed elsewhere at considerable length [*Quarterly Journal of Economics*, Vol. XXXIV, pp. 473-519], the conclusion being that competition cannot properly be regarded as ruinous except possibly in a quite limited range of industries."

which would eliminate the need for hand blowing the cylinders from which at that time all window glass was cut. The American Window Glass Company did not, however, look upon this as a means by which it could, through a lowering of cost and orderly reduction of prices to levels lower than would otherwise be practicable, extend and hold its business. It still thought only in terms of eliminating any possible rivals—after which it might enjoy the full fruits of the monopoly which, owing to its patents, it presumed could not successfully be challenged.

Pursuing a policy of buying what factories it could, the company now proceeded to force the price of window glass so low that it would appear that all competitors, with their old-fashioned methods, must surely be forced from the field. In the five years, 1904-09, when prices in general were rising, the average price of single-strength window glass was reduced from \$2.39 to \$1.70 a box—although the machine methods, after all, affected only a minor part of the cost of manufacturing glass.¹⁸

In undertaking just this strategy the American Window Glass Company was, however, making a mistake. For the cost disadvantage of the hand-process competitors lay primarily in the high wage rates which had long been paid to the highly skilled workmen who blew window glass cylinders by hand. Now, rather than be forced out of employment, these men, who were organized as the National Window Glass Workers of America, agreed with their employers on a sliding scale arrangement under which their pay was correlated with the price of glass. From an average of about 90 cents a box (single strength) in 1903, the wage compensation for

¹⁸ Myron W. Watkins, *Industrial Combinations and Public Policy*, p. 152.

hand blowing was reduced to 30 cents in 1912-13. Furthermore, whereas the manufacturers had formerly been restricted to an operating year of never more than ten months, and frequently as little as seven or eight months, the union now agreed that the manufacturers might operate up to a full twelve months. The hand-blowing factories therefore continued to operate, and for some years the very effort to monopolize the industry led to such an intensification of competition that the consuming public apparently received more, through lowered prices, than the entire gain which came through the development of machine glass blowing.¹⁹

In 1909, however, quite different tactics were tried. Early in that year the independents had organized the Imperial Window Glass Company, which acted as the sole selling agent for fifty of the fifty-six independent plants, representing 97 per cent of the country's non-machine-equipped furnace capacity. Now, suspending their efforts to crush competition, the American Window Glass Company and the organized independents joined forces in raising the price of glass; so that in a little over a year prices were advanced by more than 70 per cent. However, the two principals in this campaign were unable to keep out new and independent producers and the scheme collapsed. The Imperial Window Glass Company, moreover, was sued under the Sherman Act, and late in 1910 it was dissolved, and its officers and directors indicted and fined.

A renewal of cut-throat competition now brought the price of single-strength glass as low, at one time, as \$1.30 a box. But in 1912 another selling agency was formed by the man who had been secretary of the Imperial; and

¹⁹ At least we know that for more than a decade the American Window Glass Company passed its preferred dividends.

this became the exclusive representative of over thirty of the some fifty independent manufacturers. From this time forth it controlled the marketing of the major portion of the hand-made product.

For a considerable period from about 1913 on, the price of window glass was maintained at levels which were quite profitable, through the unostentatious but effective cooperation of practically all the parties having a major stake in such prices. The industry had long been seriously over-developed, owing to the fact that the introduction of new equipment had not been offset by an abandonment of old, or by a sufficient increase in demand. With a view to maintaining prices that would yield profits on this large investment, the industry now followed a policy of sharing the business, each group imposing on itself a considerable burden in the way of part-time operation. Enforcement of this program was greatly facilitated by the active cooperation of the glass workers' union. Indeed, it could hardly have been made effective, so far as the independents were concerned, without this support. In the annual employment agreement negotiated between the National Window Glass Manufacturers' Association and the union of the skilled workers in the industry, it was provided that no factory should be operated more than four and a half months in the year. In order to make evasion impossible, the agreement fixed the dates between which each shop might operate. Avoiding their earlier error of a too extreme and rapid price rise, the glass manufacturers advanced single-strength glass by 1914 to \$2.26 a box—33 per cent above the 1909 average. And the American Window Glass Company was now able to begin payment of the preferred dividends which had so long been passed.

Though this technique of curtailment was for some

years effective in holding up prices and also profits, in the end it ceased to do either. Following the war the spread of new glass-making techniques swamped the independents and reduced the firm which had once striven so hard for absolute monopoly to a position in which it was only one, and not the largest, of several concerns of the second rank in the industry.

THE FIRST PHASE OF ALUMINUM

The company organized in 1888 as the Pittsburgh Reduction Company and in 1907 re-christened the Aluminum Company of America was, through most of the period which we have been considering, a comparatively small enterprise. Such size as it then attained, moreover, was not effected by combination, but by the development of a new industry from small beginnings. It is appropriate, however, that we include in this chapter a brief account of the Aluminum Company and its price practices during its first twenty-five years, since it was then laying the foundations of that later greatness which caused this concern to be regarded by many people as a conspicuous example of the monopolistic phase of American industry.

The Pittsburgh Reduction Company was organized to produce aluminum by a patented electrolytic process which greatly reduced cost as compared with the previously employed chemical process. The company's basic patents expired almost thirty years ago. That the company has continued to be the sole producer of virgin aluminum ingot in the United States is primarily owing to the fact that during its early years it so established itself in techniques, resources, and organization²⁰ that it

²⁰ Perhaps the greatest advantage which the Aluminum Company built up in its first twenty years was that of technical personnel. Even after the electrolytic process was well understood, the variables in mate-

was extremely difficult for any other business group to enter the industry with prospect of success.²¹

Despite the protection afforded by its patents, the first dozen years of the Aluminum Company's career were fundamentally competitive in general background and spirit. This was partly because the patent law gave no protection against the importation of aluminum from abroad. Although the Aluminum Company has remained the sole domestic producer of virgin ingot, there has all along been a separately owned aluminum industry in Europe. At times this has meant vigorous competition in

rials and operating conditions proved to be so great that it was many months before the company could be confident that the product which came from its reduction cells would really be marketable aluminum. As the company gained in experience, its experts accumulated more and more detailed knowledge of what made for quality of product and economy of operation. And this knowledge long remained theirs alone. Especially in the earlier years, Aluminum Company men who were familiar with the technology of the new metal practically never left to take employment elsewhere. Thus it was impossible for skill and knowledge with respect to making aluminum to become diffused.

²² Dividends during this period were on a moderate basis and earnings were plowed back into the company to finance its growth as the market was developed. Since the stock of the company was very closely held, bankers and possible investors had little means of assuring themselves whether the business would offer attractive possibilities to new enterprisers. The investment manuals contained practically no information about the capitalization and earnings of the company. (See *Moody's Manual*, 1905, p. 1823; 1911, p. 2619. This *Manual* for 1915 appends a note stating: "The company declines to furnish any information regarding its earnings or financial condition." Substantially the same statement was carried in successive issues for the next decade. With the *Manual* for 1928 income accounts began to appear.)

Aluminum production requires a very heavy investment in proportion to output, and the company for some time encountered considerable resistance to rapid expansion in use of the metal. With the advantage of its early start and its willingness and financial ability to provide capital as fast as it could be profitably employed, it was not strange that others left the field largely to this one company.

A French group possessed of the necessary experience and resources started to enter the field of American production in 1912, but the coming of the war made it necessary for them to withdraw, selling out to the Aluminum Company of America. To this merger the United States government gave its approval.

the American market. Some measure of tariff protection was secured, beginning in 1891 at a rate of 15 cents a pound but reduced to 10 cents in 1894 and to 8 cents in 1897. This kept foreign competition from being close. But the quantity of aluminum imported could be and was reduced to and held within negligible limits only because the prices of the Aluminum Company were at all times kept well below the upper limit fixed by European conditions and America's tariff. More immediate than foreign competition in the actual determination of price was the fact that in order to get a market at all, it was necessary for the Aluminum Company to wrest business from the suppliers of competing materials, particularly other metals.

The first small batch of aluminum produced by the Pittsburgh Reduction Company was sold at \$5.00 a pound, presumably the current market price, but reduction in the price of chemically produced aluminum quickly brought a decline to about \$4.00 a pound. In the fall of 1889, the company dropped its price to \$2.00, with the evident intention of expanding the market. At this price, chemically produced aluminum was pushed out of the picture; and an electric furnace process which could yield aluminum alloys but not the pure metal was also rendered obsolete. The Pittsburgh Reduction Company was not satisfied, however, to permit the growth of the company to be restricted to the size of the market for aluminum which could be developed at even \$2.00 a pound. In 1891 the price was reduced to \$1.21, in 1892 to 85 cents, and, by yearly reductions of never less than 7 cents, to 36 cents per pound in 1897.²² In December 1897, the price became 33 cents.

²² These prices are averages for the respective years. Prices through 1908 furnished by Aluminum Company of America. Prices from 1909 on, from the "American Metal Market," as compiled in *Metal Statistics*.

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In cutting the price of aluminum from \$4.00 to 33 cents in the eight years 1889-97, the Aluminum Company obviously passed on to the general public by far the greater part of that lowering in the cost of producing aluminum which was made possible by its epochal technological discovery. As for the relation between the price of aluminum and the quantity consumed, the following figures show the trend:

Year	Average Price	Production in Nearest Fiscal Year ²²
1889	\$4.08	(About) 50,000 pounds
1893	0.78	216,000 "
1896	0.48	1,002,000 "
1900	0.33	5,062,000 "

These figures do not reveal the full extent of the price reductions which the Aluminum Company made in its effort to break down the price resistance to the use of aluminum on a wider scale. Early in the 90's, in the hope that aluminum might compete with brass in the castings market, the company introduced a special casting alloy and offered it at a "development price." In 1897, in an effort to make headway against brass in sheet form, the company lowered the price of aluminum sheet and called attention to the fact that on a volume basis aluminum was cheaper. In 1898, seeking to introduce aluminum into the field of electrical transmission, the Aluminum Company offered wire bar to be used for electrical conductors at a special price of 29 cents per pound; and in that same year, the amount of aluminum sold for this purpose rose to 1.3 million pounds.

Price reduction alone could not, however, have produced the tremendous growth in the use of aluminum which took place during the 90's. As long as the Aluminum Company confined itself almost wholly to ingot

²² Figures from U. S. Bureau of Mines.

production, it was next to impossible—at any price or by any persuasion—to get the producers of finished products to make any substantial shift from the materials with which they were familiar. The manufacturers of cooking utensils, for instance, would not buy aluminum for conversion into their product; nor would the operators of sheet or wire mills, who had been accustomed to working in brass or other metals, start aluminum along the paths which would lead to final consumption in the markets which they served. The technique of working aluminum was at this time little understood by anyone. Really suitable equipment was not yet in existence. And few if any firms in America other than the Pittsburgh Reduction Company were willing or able to develop the market which logically belonged to this new metal. So the company began to build foundries, sheet mills, wire mills, and eventually pioneered in every branch of aluminum fabrication. It either produced articles ready for ultimate consumption, or semi-manufactured products such as sheet, which independent manufacturers could readily handle from that point on.

Following December 1897, the Aluminum Company ceased further price reductions and kept a quotation of 33 cents per pound until late in 1905. During 1901 the first aluminum cartel was formed by European producers. In this a Canadian subsidiary of the Pittsburgh Reduction Company participated. Immediately after the formation of the cartel, European prices of aluminum were considerably advanced and raised still further during the boom period beginning in 1904. From 1904 on, prices of metals in general showed a strong upward trend. As compared with this general movement and the marked advance in aluminum prices under the European cartel, the Aluminum Company of America was relative-

ly moderate in the departures which it made from the 33-cent basis. It advanced its price to 35 cents on December 1, 1905 and to 40 cents a year later. On August 1, 1907, the price was reduced to 35 cents and back to 32 on January 1, 1908.

Apparently the cessation of the downward movement of aluminum prices at the turn of the century considerably checked the rate of growth of aluminum consumption especially in the four years which immediately followed 1900. In view of the fact that copper, aluminum's closest competitor, went down about 20 per cent between 1900 and 1904, aluminum, by comparison, was becoming more costly. Whereas the annual production of aluminum had risen from 1 million pounds in 1896 to 5 million pounds (400 per cent) in 1900,²⁴ it rose from the latter year to 1904 only to 8.1 million pounds (a further increase of 60 per cent). The whole situation was materially altered, however, when, following 1904, aluminum prices rose but moderately, while other metal prices advanced sharply. Now the old rate of growth was more nearly approximated—production in the calendar year 1907 being twice as great as in the fiscal year ending August 31, 1904.

The Aluminum Company of America profited from its course of not raising its prices as much as it could have raised them during the period of intense business activity which culminated in 1907. The use of aluminum was extended greatly and, with this enlarged volume, the company enjoyed in 1905, '06, and '07 its first really

²⁴ Although the price of aluminum was stationary from December 1897 through 1900 (and beyond), other prices were at this time rapidly mounting. Copper in particular advanced between 1897 and 1900 by 47 per cent. As a result, therefore, the decline in the relative cost of aluminum to consumers started in the 80's continued practically through 1900. Copper prices in 1900 were, however, slightly below the peak of 1899.

prosperous period. It declared a stock dividend of 100 per cent in November 1904, and another of 500 per cent in 1909.

While the Aluminum Company, during the decade following 1897, avoided excesses of price-raising such as characterized many of the monopolistic forays in other industries, the company was not following at this time any discernible policy of passing on to consumers the gains from further technological progress. The company, during this decade, was becoming much better integrated than before and its volume of production reached to five times the 1898 level. Though the last of the company's patent protection was to expire in 1909, it did not try to assure its position through voluntarily bringing its prices into closer adjustment with other metals or with the cost of producing aluminum itself. Instead, it sought till well along in 1908 to maintain a price of 32 cents.²⁵

In this, however, the company was reckoning without one important factor. Under the cartel, all the European producers had greatly increased their capacity; and seven new firms had been launched. For several years, no difficulty had been encountered; for the expansion took considerable time and the demand for aluminum was rapidly increasing. But when, in the latter part of 1907, world depression came upon the aluminum industry, the whole cartel system—with its high prices and intense stimulus to multiplying capacity—became unworkable. In September 1908 all agreements then existing among foreign producers were dissolved, and a period of cut-throat competition ensued, so that for the

²⁵ The price of 32 cents set on Jan. 1, 1908 held until July 1. Thereafter prices fell rapidly to 24 cents on November 1.

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next six years aluminum from the over-developed plants of Europe poured into the United States.

The effect was to bring down the price of ingot in the domestic market, by 1911, to approximately 20 cents.³⁸ With this great fall in price the consumption of aluminum once more started a rapid rise. The metal won for itself a larger place in automobile manufacture and electric transmission, as well as cooking utensils and minor items. Production of aluminum in the United States increased from its previous record of 16 million pounds in 1907 to 47 million pounds in 1913. If the great flood of imports is also taken into account, it would appear that the consumption of aluminum within the United States now increased about five-fold over the maximum attained during the previous great boom. In 1912 new factors entered the situation and there was a brief period of higher prices. The later story of aluminum can, however, be more appropriately considered in the next chapter.

³⁸ How much lower the price might have gone at certain times had it not been for the aluminum tariff must be a matter for conjecture. The tariff rate was reduced in 1909 from 8 cents to 7, where it remained till near the close of this period, when the Underwood tariff cut the duty to 2 cents.

CHAPTER IX

THE LARGE CORPORATION AND PRICES—RECENT PERIOD

For some fifteen years after the first great wave of big business consolidation subsided in 1904, no similar movement was undertaken. This decade and a half may be conveniently thought of as made up of two phases. The first was characterized by the efforts of the Bureau of Corporations and the courts to curb the action of large corporate organizations. The second phase was characterized by the strengthening of regulation through the metamorphosis of the Bureau of Corporations into the Federal Trade Commission and, after our entering the War, the mobilization of industry with the War Industries Board as arbiter of industrial conduct.

TWILIGHT ZONE, 1904-20

It was pointed out in the previous chapter that the great industrial consolidation movement which marked the closing years of the nineteenth century and the opening of the twentieth came to an abrupt close not merely because of the loss of its internal momentum but also because of external attacks. Theodore Roosevelt sounded a note of concern over the results of large corporate mergers in his first annual message in December 1901. He voiced a popular feeling that industrial mergers were creating oppressive monopolies. He secured approval of Congress in February 1903 for a new cabinet post—Secretary of Commerce and Labor—and in this department a Bureau of Corporations was promptly set up.¹

¹ Such a bureau had been recommended by the Industrial Commission which studied the trust problem from 1898 to 1900.

In February 1902, Roosevelt had caused the Attorney General to initiate proceedings against the Northern Securities Company, and in 1904 the Supreme Court, by a five to four decision, ordered the dissolution of this holding company. This action was followed in 1911 by the breaking up of the Standard Oil Company into thirty-four parts and somewhat similar action against the American Tobacco Company and the powder trust. President Taft pressed anti-trust action even harder than Roosevelt had done² and the apparent let-down during Wilson's administration was due to the complications of war activity³ and the fact that so many complaints had by that time been disposed of rather than to any complacency on his part as to the economic effects of large business consolidation.

The views expressed by President Wilson are particularly pertinent to the lines of analysis being followed in the present book. He emphasized "the difference between big business and a trust," saying:

A trust is an arrangement to get rid of competition, and a big business is a business that has survived competition by conquering in the field of intelligence and economy. A trust does not bring efficiency to the aid of business; it *buys efficiency out of business*. I am for big business, and I am against the trusts. Any man who can survive by his brains, any man who can put the others out of the business by making the thing cheaper to

² "During the seven and one-half years of Roosevelt's presidency 44 proceedings all told had been instituted, while during the four years that Taft was President there were 46 bills in equity, 43 indictments, and 1 contempt proceeding—a total of 90, or more than twice as many proceedings in about half as long a period. Moreover, the suits filed by Attorney General Wickersham (President Taft's Attorney General) included a number of very important trusts and combinations not disturbed by the preceding administration." Eliot Jones, *The Trust Problem in the United States*, p. 444.

³ It was for this reason that the International Harvester Company in 1918 agreed to a consent decree. Moreover, other corporations at various times also accepted consent decrees.

the consumer at the same time that he is increasing its intrinsic value and quality, I take off my hat to, and I say: "You are the man who can build up the United States, and I wish there were more of you." There will not be more unless we find a way to prevent monopoly. . . . I thank God that the business men of this country are beginning to see our economic organization in its true light, as a deadening aristocracy of privilege from which they themselves must escape. . . . Some men who have been led into wrong practices, who have been led into the practices of monopoly, because that seemed to be the drift and inevitable method of supremacy, are just as ready as we are to turn about and adopt the process of freedom. . . . What we propose, therefore, in this program of freedom is a program of general advantage. Almost every monopoly that has resisted dissolution has resisted the real interests of its own stockholders. Monopoly always checks development, weighs down natural prosperity, pulls against natural advance. . . . Wherever there is monopoly, not only is there no incentive to improve, but, improvement being costly in that it "scraps" old machinery and destroys the value of old products, there is a positive motive against improvement. The instinct of monopoly is against novelty, the tendency of monopoly is to keep in use the old thing, made in the old way; its disposition is to "standardize" everything. Standardization may be all very well—but suppose everything had been standardized thirty years ago—we should still be writing by hand, by gas-light, we should be without the inestimable aid of the telephone, without the automobile, without wireless telegraphy.⁴

For a decade after its establishment the Bureau of Corporations had been active in making investigations of the affairs of various corporations, its reports being used not alone for the enlightenment of the public but as a basis for legal action by the Department of Justice. The Bureau possessed no regulatory powers, but during Wilson's administration (1914) it was raised to the dignity of an "independent commission" with authority, upon investigation and public hearing, to issue cease and

⁴ Woodrow Wilson, *The New Freedom*, pp. 180-81, 261, 265-67.

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desist orders to corporations which it found to be following "unfair trade practices."⁶ With enlarged power and funds it expanded its activities during the following years, the character of its studies being in part dictated by its own judgment but in part also being directed by requests emanating from the President, the Attorney General, or one of the houses of Congress. It also responded to requests for information (as to production costs or otherwise) made of it by the War Industries Board, the executive departments, or the special war-time "administrations" (fuel, food, railway, and so forth).

During the period which intervened between the decision of the Northern Securities case in 1904 and the United States Steel Corporation case in 1920, it would appear that three developments had been taking place with reference to the whole question of industrial organization and industrial prices in the United States. First, the corporations themselves had learned in the school of experience much more about the nature of monopoly and the limitations upon the advantages to be derived from the use of monopoly power to enhance prices. Second, those who were concerned that a healthy competitive condition in industry should be maintained had greatly increased their knowledge of the trade practices followed by large industrial corporations during the period of their headstrong youth. They had begun to formulate and to some extent apply rules of fair trade practice designed to establish a higher plane of competition and police the conduct of those unwilling voluntarily to follow this code of business ethics. Third, the courts

⁶ These were not defined in the Federal Trade Commission Act; but in the Clayton amendment to the Sherman Anti-trust Act, which was passed the following month, four specific prohibitions were laid down covering price discriminations, tying contracts, holding companies, and interlocking directorates.

had abandoned the attempt to apply the prohibitions of the earlier anti-trust legislation literally in such a way as to abolish the very form of business combination. Instead they sought to keep forms of organization which were convenient and even necessary for the utilization of modern industrial techniques from being abused into actual restraints of competitive trade. To distinguish more realistically the actual economic results of industrial conduct, they sought to differentiate (with the aid of a fact-finding and analytical commission) between good and bad combinations, between reasonable and unreasonable restraint of trade or enhancement of prices.

The "rule of reason" had been accepted by the United States Supreme Court in 1911 even though it then found both the Standard Oil and the American Tobacco companies exerting unreasonable restraints. In 1920 the Court held in the United States Steel case that mere size or power was not outlawed by the Sherman Act if such power was not exerted to effect actual restraint of trade and the stifling of competition.

Though this decision brought to a close what we have called the "twilight zone," and paved the way for the second great wave of corporate consolidations in this country, the circumstances under which it was rendered conveyed a distinct warning and one that was generally heeded. The decision itself was arrived at by a close and perhaps only a technical majority.⁶ Furthermore, the

⁶There is ground for suspecting that the Steel Corporation won this case by default. Only seven of the nine justices participated in what proved to be a four to three decision. And the two justices who disqualified themselves, Justices Brandeis and McReynolds, presumably did so because of their known association with those favorable to the Steel Corporation's dissolution, Justice Brandeis having before his accession to the bench publicly expressed an opinion that the Steel Corporation was in fact a trust, and Justice McReynolds having been Attorney General for a year and a half during the time when the department of which he was

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defense was based on claims of good behavior;⁷ and the Court, in absolving the defendant, accepted the view that former collusive practices had been definitely abandoned. Since, moreover, the results of numerous efforts to use monopoly power to exact high prices had proved disappointing to most of the consolidated companies which had tried them, it would appear that by the early 20's big business was beginning to move toward lines of policy which conformed more closely to public policy as enunciated in the anti-trust acts as they had come to be interpreted by the courts.

PRICE-MAKING IN THE OIL INDUSTRY SINCE 1911

Since our principal illustration in the chapter dealing with the earlier price policies of corporations was oil, it is appropriate that we again turn first to that industry, as we undertake to examine corporate price policies in the more recent period.

For some years following 1911, the partition of the Standard Oil Company into thirty-four constituent companies had little effect on the actual conduct of business. At the outset, each person who owned stock in the parent company was given an identical percentage in each of the split-off companies. Each unit had its appointed place in the production, transportation, refining, or marketing of oil, from which it was expected that it would not depart, operating much as though it were a division of a single concern. The officers of several of the new corporations were housed in the same building. Coordination between the companies was made easier by the dominat-

the head was prosecuting the suit. As Professor Fetter has said, "Never has there been a more paradoxical situation and a closer decision in an important case in our highest court."

⁷As to the significance of this policy of "friendly competition," however, see pp. 125-26.

ing size of a few of the companies, particularly the reduced but still large Standard Oil Company of New Jersey.

With the lapse of time, however, developments both without and within the Standard Oil group came to change profoundly the business structure and the character of the relations between companies in the industry. As a first factor making for modification of the old order, dissolution of the parent company was a signal to all that petroleum refining was safe from the restrictive trade practices that had formerly handicapped the independents. The conditions of the day called for a great expansion in the petroleum industry to supply the market for gasoline being created by the automobile industry. The opening up of new oil fields in the South and West provided the means by which this demand could be met. Partly because of these new opportunities, partly because of the greater sense of security, and partly because of the fact that the expansion of the oil industry occurred in sections of the country in which the Standard Oil Company had never been entrenched (except in the marketing of petroleum products), a flood of new capital poured into all branches of the business. Besides many companies of lesser size, there arose several large-scale integrated concerns, such as the Texas Corporation, the Gulf Oil Corporation, and the (Sinclair) Consolidated Oil Corporation. In such a dynamic situation technological progress is likely to be brisk and competition active.

As this situation unfolded, the major units into which the Standard Oil Company had been split began slowly to develop along individualistic and sometimes conflicting lines. In the expansion and geographical reorientation of the industry it would sometimes happen that a Standard unit which was supposed to buy its crude oil

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from, or through channels controlled by, others in the Standard group could not thus be most effectively served and the unit would go out and enter into a working alliance with some independent company. Or, in order to obtain a market, a Standard unit might develop independent marketing affiliations, or round out its own organization in that direction. Furthermore, with the gradual metamorphosis of management as new blood displaced old, personal ties between the companies were weakened and there eventually developed a spirit not only of rivalry but of suspicion and bitterness which has sometimes made the companies outright antagonists. A highlight in the struggles which have transpired within the Standard group was the entrance by the Standard Oil Company of New Jersey into New England, a territory long regarded by the Standard of New York as its own. Such conflicts between Standard units became possible because, though the Rockefellers and other persons and interests associated with them still hold large blocks of stock in many of what are known as the Standard companies, the diffusion of ownership was long ago carried to a point where no one had absolute control. It was indeed only by a great effort, and in response to what was regarded as great provocation, that the Rockefellers were able some years ago to oust the president of the Standard Oil Company of Indiana.

From a situation in which the oil industry appeared to be under the almost absolute control, first of one great company and then of a tightly knit group of commonly owned companies, the ownership pattern of the industry had by the mid or latter 20's been transformed into one of exceedingly great complexity and variety. Today, there is at the one extreme among oil companies the second largest of the country's industrial corporations,

Standard Oil Company (New Jersey), with a capitalization of about 2 billion dollars. But far from this meaning that there is only one big company, there are within the Standard Oil group alone six other major companies (four of them integrated very much like the New Jersey company). Beyond this there are twelve *independent* majors (including among these the Royal Dutch Shell organization)—these eighteen other companies having together a capitalization of close to three and a half times that of the New Jersey company. The existence of this number of separate concerns, all of them large, representing several different types of organization and antecedents, would in itself remove the possibility of any all-embracing leadership by a single company. But the possibility that the whole industry might get together on any basis, other than by government sanction, has been made very remote indeed, owing to the fact that in every branch of the industry, except possibly in transportation, there are great numbers of non-integrated independents, some of which, by the standards of most industries, would be considered large, many others comparatively small.

The way in which the prices of oil in general, and gasoline in particular, are now determined reflects not only this corporate organization of the industry but also the system of proration of oil production by state governments.⁸ First extensively applied by Oklahoma in 1927,⁹

⁸The most important objective of proration (from the standpoint of the larger national interest) is so to regulate the manner in which oil is taken from the ground that a maximum amount will be recovered and, so far as possible, at minimum expense. This requires maintenance of the original gas pressure in the oil sands so that the petroleum will flow freely through the pores of the rock and, given sufficient time, almost all of it reach the well and be recovered. Naturally, the daily flow of oil is much less rapid, and it may take fifteen years more or less—instead of perhaps three years—for the bulk of the oil that will be taken from a given area to be withdrawn. As fundamental also to a

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compulsory proration was in 1930 extended beyond the individual pool to a state-wide basis. In that year also effort to achieve adjustment between production and consumption on a national scale was made through the issuance of Federal Oil Conservation Board "estimates" of consumption for periods of from three to nine months in advance. These estimates, which amounted to recommendations, were continued through 1932 and followed by more vigorous controls under the NIRA.¹⁰

Conservation of oil—and particularly the adoption of techniques which increase aggregate recovery—should

conservation program, it has commonly been held that the price of oil should not be allowed to drop so low, owing to too great a supply, that small wells would be abandoned.

From the viewpoint of reducing the cost of developing oil fields, perhaps greatest importance should be attached to the compulsory wider spacing of wells and the fact that no one is permitted, through overdrilling or too rapid withdrawal, to take more than his share of the underground reserve. To the extent that producers are assured that they need not hurry and are in fact forbidden to develop a field with more than a certain intensity, the waste arising from the drilling of an unnecessarily large number of wells is greatly reduced.

Originally, practically the sole purpose of proration, in the minds of those who developed it, was to curtail the supply of oil and so uphold prices. The conservation idea, first pressed as an excuse, is at the present time rapidly winning wide support among oil men because, over the life of a well, it means much lower cost.

¹⁰ The act providing for quotas was passed in 1915, but the application of control was shortly allowed to lapse.

¹¹ The Schechter decision ended federal regulation of oil output or prices. Since then the Bureau of Mines has offered its suggestions; but these have had no binding force. Proration within the oil-producing states has been rapidly growing in effectiveness.

Supplementing the powers exercised by the individual states and the advisory activities of federal agencies, three states in 1931 entered a production accord to which other states informally adhered. Likewise following the invalidation of the NRA, six states joined in an interstate compact for the coordination of their respective powers to regulate production. Participation has never been even approximately universal, and there is no power of enforcement. It would appear, therefore, that except during the NRA, the main responsibility for proration has rested upon the legislatures of the several states and the state and local enforcement authorities.

mean lower prices in the long run than would otherwise exist. The early effect of slow withdrawal, however, has been to decrease the amount of oil immediately available from many fields. Thus proration by state governments has tended to put a floor under oil prices, which has given them a certain inherent stability and strength entirely independent of the degree of competition existing or not existing in the oil industry, or of what the oil men as individuals or in groups do or do not do.¹¹

We pass now from policies of the states which affect price to a consideration of the pricing activities of oil companies as such. The typical procedure in arriving at a new gasoline price is for the company which does the largest volume of the business in a given locality to take the lead in announcing the change. If the less important distributors in the area, on the basis of their own analysis of the situation, believe that the new price satisfies conditions, taking into account the competitive line-up as well as conditions of supply and demand, they will go along with the new price. In the great majority of cases, that is what happens. But it does not always happen. The president of one oil company states that in perhaps twenty or thirty instances in the course of a year, his firm did not go along with a price change initiated in a given area by the company which was there the recognized price leader.¹²

¹¹ To an increasing extent, the proration movement has come to be administered with a view to conservation rather than merely the holding up of prices. Yet the very nature of proration inevitably operates not only to soften the impact on prices of the opening of new fields, but, until the industry as a whole has had time to adjust itself to the new plan of operation, to strengthen oil prices generally.

¹² Even Burns (*Decline of Competition*, pp. 93-109), who starts from the thesis that competition is dead or moribund, finds the Federal Trade Commission reports on gasoline prices and the petroleum industry yielding much evidence that the industry does not docilely follow the price leadership of the Standard group or any particular company within it.

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When one looks yet deeper for the forces which cause any company to initiate, or on the other hand follow or not follow any given trend of price, one can see that the pressures which are supposed to characterize a competitive economy have for the most part been vigorously at work. At the termination of the period of NRA control, oil prices naturally remained firm; for the development of capacity had been neglected, inventories had been allowed to drop below normal operating levels, and there was now a revival of demand. The refiners made a great deal of money. But in response to these profits, they added new units, and soon they reached a point where the companies were fighting one another—competition becoming hard and bitter even as between the companies belonging to the Standard Oil group.

In addition to the traditional type of struggle for a given market among the firms which have long been doing business there, and the invasion from without by companies which, though new in the particular market, had long been operating along conventional lines elsewhere, the oil industry has in it a type of management which consciously subscribes to the philosophy of striving vigorously for the lowest possible costs, and then extending its field of operations by the lowering of prices—at least to whatever point may be necessary to market its expanding volume of output.

One firm, which we may take as an outstanding example, after having been operated along somewhat specialized lines for two generations, started about eleven years ago to go in a much more extensive way than formerly into the production of gasoline. The company had met the crisis in which it found itself during the early post-war depression by such intensive effort to increase plant efficiency that in a few years its costs were

drastically cut. It has been the practice of this company to tear its plant apart every six or seven years, and reconstruct it in such a way as to incorporate the most advanced technique available. The proportion of gasoline recovered and the output of equipment have been, and are now being, enormously increased.

In addition to bringing capacity in refining to record new levels, this company, though not large as companies are rated in the oil business, has worked out an integration of facilities all the way from the oil field to the gas station so that it has come to be recognized in this respect as one of the best organized in the country. Not only has it brought under one ownership crude oil production, a fleet of tankers, a thousand or so tank cars, a thousand or so tank trucks, and crude oil pipe lines, but it pioneered in building the first pipe line for the transportation of gasoline from an eastern refinery to mid-West markets. This has materially reduced the cost of placing its finished product in markets to the north and west. Distributing centers are spaced in conformity with the much greater operating radius which is made possible by the use of motor trucks as compared with the teams which were the determining factor in the laying out of the older distributing systems. Precedent has been broken with respect to the grading of the gasoline sold to the public and the method of advertising. The company also comes in under proration plans that are increasing, to what might be considered as a revolutionary extent, the total volume of oil which it is believed will ultimately be obtained from the oil sands.

This company has tended to pass on to consumers at least a substantial part of the gains from this great technological progress, not through charging a great deal less for gasoline than other firms—for others could not

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afford to fail to meet the competition—but through policies which exert an influence on the price structure as followed by all the companies affected by its operations. For instance, in Michigan, the dominant oil companies selling there had been basing their prices on the cost of transporting oil by rail from fields far to the south, although the oil was actually carried by pipe lines at a mere fraction of the rail cost. When the company of which we have been speaking was able, because of its gasoline pipe line, to put its product on the market at a lower cost than could other eastern refiners, it was disposed to take account of this economy in its pricing policies. This was apparently of real influence in bringing a generally lower level of gasoline prices in this area.

Competition among the greater oil companies, ranging from the highly constructive to what some might regard as cut-throat, has for some years been the most arresting aspect of the oil picture. Prices have at times been much depressed; and some hold that it is only proration which keeps the competition among the giants and near-giants from forcing prices to a point so low that the most efficient company could no more than break even. Others, however, believe that if the giants were left entirely alone, they would compose their differences; and that it is really the presence of a great mass of small companies in many branches of the industry which keeps competition dynamic.

Without attempting to pass on this question, it seems clear that the small companies play an important rôle. In spite of the huge size of the organizations under which the greater part of the oil industry has been carried on—especially in stages beyond crude production—ever since the 1870's, there are many places in the oil industry where a comparatively small concern can, given good

management, render some physical or commercial service just as efficiently as could a very large company. This applies to some extent to refineries, where a big plant is in the main simply a combination of a number of small units. It applies especially to distribution in which the small active distributor can frequently handle the product considerably cheaper than can a large company.

The small non-integrated company is likely to operate under external handicaps as respects costs of obtaining its raw materials, irregularity in the differences between the prices which it pays and those which it receives, and perils of various sorts. Hence many small companies sooner or later find themselves in serious difficulty. However, as a group, they continue; and they stretch in a chain from the oil fields to the ultimate automobile-operating consumer. Gasoline from oil produced possibly by small independent oil men, and refined by comparatively small non-integrated firms, is made available to the consuming public by "track-side" distributors at prices from a half cent to 2 cents under the regular gas station price. The gasoline is as a rule good, though generally not as good as the best grades sold in the regular gas stations.¹³ The business is often highly organized, a single distributor having as many as 700 outlets.¹⁴

¹³ It is alleged that Ethyl has been systematically withheld from price-cutters, thus making for non-uniformity in the type of gasoline sold, and an impairment to that extent in the directness of competition. See Walton Hamilton and Associates, *Price and Price Policies*, p. 128.

¹⁴ Only a part of the gasoline of independent refiners is disposed of through "track-side" distributors. Much of it is sold through regular service stations.

Another important channel of competitive distribution has been opened up under cooperative auspices by the great body of rural users of gas and oil. See J. G. Knapp and J. H. Lister, "Cooperative Purchasing of Farm Supplies," *Farm Credit Administration Bulletin No. 1*, September 1935, pp. 18-21.

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The distributors of gasoline through "regular" channels will go along for a time without paying much attention to cut-price operators. But if they feel that they are losing too much business, they will then place on their own lower-quality gas a price which meets or almost meets that charged by their low-price competitors. There is also a form of price-cutting which is practiced by the regular dealers themselves, which takes the form of special prices to large users, or to individual or special groups, who may be either large or small consumers.

Amidst all these forces it will be seen how far any one corporation or group of firms is from having any real control over gasoline prices. Although others look to the biggest distributor in any area to diagnose the situation and set the pace, the price leader's decision must be made with due regard for the fact that there are competitive interests which are eager to grasp any opportunity to better their standing in the market; and the naming of an arbitrary price—or even a mistake in judgment—may seriously embarrass the price leader.

To be sure, efforts at price maintenance have not been lacking. The recent Madison case, in which a jury in a federal district court found a group of oil men guilty of conspiring to fix prices, grew out of developments which took place in 1934 and 1935. At that time the price of gas was perhaps too low. At any rate, the independent refiners who had to buy at current crude oil prices were threatened with annihilation. So a group of major oil companies went into the market and bought gasoline with at least a two-fold purpose, first of aiding the distressed refiners and thus removing a possible cause for public intervention in the oil industry, and second, of relieving the pressure from the distressed oil in those communities in which it was seeking a market. At the same time, how-

ever, they accomplished a third and much more sweeping result. For the systematic purchase, on other than a competitive basis, of even a small quantity of gasoline which might otherwise have sought the extremely small spot market had a marked effect on the price quotations for spot gasoline, and, therefore—since this was the base upon which most gasoline contracts were predicated—on all gasoline prices. In consequence, there was an outstanding rise in the wholesale price of gasoline. The price remained up, to the substantial profit of the oil companies, for six or seven months. Then the Department of Justice brought suit. Prices dropped sharply but soon moved up again in response to general market forces.

There is reason to believe that as early as 1931, some men in the oil industry were working towards the objective which, for several months beginning in 1935, actually was attained; and that attempts were also made in 1932, in 1934, and possibly also in 1933. Owing, however, to unfavorable circumstances, none of these earlier attempts succeeded for any length of time—even when the government, under NRA, was an active partner.¹⁵ So it remains true, that, notwithstanding wide and in some measure successful efforts at price control, the oil industry has for some time now been overwhelmingly competitive.¹⁶

¹⁵ The effects of the price situation which followed the bringing of the Department of Justice's suit, however, raise some questions. The independents are caught between the millstones of crude oil prices held up by proration and gasoline prices held down by competition. They are at a disadvantage compared with the integrated companies, to whom the crude price makes less difference. A large number of the independent refiners have been compelled to shut down. The difficulty of their situation is no doubt enhanced by the depression, but, should the small independents be permanently forced out of business, it would remain to be seen whether the presence of the smaller concerns is needed as a prod and guarantor of competition among the big companies.

¹⁶ Throughout our analysis we have been dealing primarily with that

In retrospect, there can be no question but that the evolution in the 20's and 30's as compared with the situation prior to the war, has been in the direction of a great intensification of competition in the oil industry. There has been great technological progress and the gains therefrom have gone to consumers far more than is generally realized. For rising gas taxes, national, state, and local, and higher crude prices due to conservation objectives, have obscured the fact that the margins in refining and handling oil have been substantially reduced.¹⁷ Indeed, the benefits of the technological progress of recent years have been more than passed on to consumers or others; for in place of the former extraordinary profits in oil, the rate of return to the petroleum refining companies as a group was in the 20's somewhat lower than

part of the petroleum industry which centers in refining and stops with wholesale distribution. Prior to 1935, it was the practice of the major oil companies to post the price at which they expected their gas to be sold at retail, whether by their own or by independent stations. As a result, however, of anti-chain store legislation and added responsibilities imposed by the Social Security and Wagner Acts and other labor legislation, the major companies generally shifted, about the summer or fall of 1935, to what is known as the "Iowa plan"—under which the companies (which now proceeded to divest themselves of owned retail outlets) renounced responsibility for retail prices.

When thus left to themselves, the mass of small retail distributors made a point, through their associations or a spirit of solidarity, of maintaining or increasing the margin between the wholesale and retail prices of gasoline; and they have gone into this with such a will that there has been a pronounced widening of the retail margin in many parts of the country. This has been especially evident since last fall when the wholesale price of gasoline dropped without that corresponding reduction which, under the older order, would have occurred in retail prices.

These wider margins have, however, tempted more people to enter into gasoline selling and have promoted either open or more or less surreptitious price cutting. The operators of gasoline stations have now turned to the state legislatures (as notably in New Jersey) and sought legislation which would by law set up a margin very much greater, in percentage, than has generally existed in the past.

¹⁷ Much of the gain from technological progress has also been passed on to labor in the form of higher wages.

the average for all large corporations. This would appear to be a not abnormal development in view of the greater maturity of the oil industry as compared with many others. Taking the twelve years 1922-33, during which there were years both of prosperity and of depression, all leading oil companies (including both Standard and "independent" units) earned an average of about 6 per cent per annum on their invested capital.¹⁸

POST-WAR PRICE DEVELOPMENTS IN ALUMINUM

In our examination of the earlier history of the Aluminum Company we brought the story down to about 1912. In that year the company was brought before the courts under the anti-trust laws. It emerged, however, with no modification of its structure but (June 7) accepted a consent decree which laid certain injunctions upon unfair methods of competition and required certain restrictive contracts to be abrogated. The company's right to retain its bauxite reserves and add to them was not restricted.

During the spring of this year, a second aluminum cartel had been in process of formation, embracing several European companies and the Canadian subsidiary of the Aluminum Company of America. Its terms were made known to the Department of Justice prior to the entering of the consent decree, but the cartel agreement itself was not signed until shortly afterward. It provided for the fixing of prices and division of sales in foreign markets. Under the consent decree the Aluminum Company was forbidden to be a party to any control of exports to the United States.

From April through November 1912 aluminum prices moved steadily upward. The rise amounted to about 7 cents. In 1913, however, Congress enacted the Under-

¹⁸ Laurence H. Sloan and Associates, *Two Cycles of Corporation Profits*, p. 234.

wood tariff, which cut the duty on aluminum from 7 to 2 cents; and prices soon fell to their old level and even lower. Output rose from 47 million pounds in 1913 to nearly 58 million pounds in 1914, an increase which was partly offset by a decline in imports. Thereafter, war influences so conditioned the operations of the company that we must pass over some years to reach a period when we can again observe the operation of prices under normal business conditions.

Prices remained high after the war but dropped sharply from the 32 cent level in the autumn of 1920 to around 24 cents during the early part of 1921. By October of that year the quotation for ingot got down to 19 cents¹⁹ per pound, where it remained for a year. In the fall of 1922, the tariff on aluminum ingot was raised from 2 to 5 cents, thus widening the range within which the Aluminum Company might adjust its prices without stimulating imports. Whereas great quantities of European aluminum had formerly been dumped on the American market, foreign producers now placed a somewhat smaller amount in the United States. Soon, moreover, the Europeans began to advance prices sharply at home, thus giving the Aluminum Company of America wider latitude as to the price it could charge in the United States.

From September 1922 through 1925, the Aluminum Company carried through a series of seven price advances. The quotation had by October 1925 advanced to 28 cents. In 1921 and 1922, production had been at a low ebb, which meant high unit costs. The labor, transportation, and general industrial situation was marked by confusion, and at the existing price level, the Aluminum Company operated at a loss. However, they had

¹⁹ Prices reported in *Metal Markets* as actually paid from October 1921 through August 1922 were, except in one month, less than 18 cents.

put a large sum from their war-time profits back into the business, improving plant and enlarging their research work in a strong separate department. The trend of costs has shown a substantial decline since 1918 or '19.

The advance in the price of aluminum ingot which began in 1922 was greatly resented by the aluminum-using industries. Besides the advance in price, several other practices or attitudes on the part of the Aluminum Company brought complaints from its customers. Much of this controversy centered around the difficulty of getting delivery of desired quantities of satisfactory quality in the strong alloys which were the outstanding development of this period. Technological difficulties led to delays and disappointments during these years which were hard on all parties. Besides this, the Company, caught in the unprofitable period of the 1921 recession, had apparently failed to foresee the rapid recovery and expansion which were to follow and had failed to expand facilities as rapidly as would have been justified.²⁰

In 1922 the Federal Trade Commission, in response to a Senate resolution authorizing an investigation of the house furnishings industry (which the Commission interpreted as including aluminum cooking utensils and the Aluminum Company itself), conducted an inquiry with a view to determining whether there existed unfair methods of competition or restraint of trade in the aluminum industry. After elaborate investigation, the Commission in 1924 reported its belief that the consent decree of 1912 had been violated and that the decree itself was not adequate. A further investigation by the Department of Justice came to the conclusion that as to claims

²⁰ During the early part of this period the company saw no occasion to expand because it had a backlog in the way of surplus stock produced during the 1921 depression. Later its delay might be ascribed at least in part to error in judgment.

of delayed shipments, defective materials, discrimination in prices, or hindering competitors, the charges were not "well founded" or "supported by the evidence."²¹ The Federal Trade Commission inquiry was renewed and continued until 1930, when it was dismissed as "not sustained by the testimony and evidence."

Whatever the facts as to whether trade practices were fair according to the standards of the Federal Trade Commission or legal in terms of the consent decree, these issues lie outside the scope of the present study. It is evident, however, that the reaction of consumers to the practices of the company, along with the successive price advances, contributed definitely to checking the growth of the industry. Engineers showed a disposition not to specify aluminum for many purposes where its natural characteristics would make it the most appropriate metal. The automobile industry was particularly critical. In the early 20's, this industry was by far the most important customer for aluminum. It has been estimated that in 1920 the average automobile (not including the Ford) took 120 pounds of this metal.²² Owing to the rapid growth of the automobile industry, there appears to have been no actual decrease in the industry's total consumption of aluminum at this time; but the automobile men were so successful in finding substitutes for aluminum that by 1925 the requirement per car is said to have fallen to 40 pounds.²³

All this illustrates strikingly the strongly competitive position occupied by aluminum. The early great expan-

²¹ *Report of the Special Assistant to the Attorney General, Senate Document No. 67, 69th Congress, 1st Session*, pp. 83-85.

²² Robert J. Anderson, "The High Price of Aluminum," *Mining Journal* (London), Jan. 30, 1926, Vol. 152, p. 92.

²³ Much of this decrease was caused by an engineering development which made it possible to cast the crank case as a part of a larger engine unit which was made of steel.

sion in the use of aluminum in the automobile industry was due to a combination of several of its distinctive qualities, lightness, ductility, flexibility, and conductivity. It could easily be shaped into bodies or cast into crank cases and cylinder heads which were easily machined. But as the vogue for low cars reduced the size of bodies, as engine power increased, and as methods of "deep drawing" or stamping of steel were perfected, the superiority of aluminum became relatively less in these uses. Its conductivity to heat makes it greatly to be desired in various engine parts such as piston heads, and it continues to be used in the higher priced cars. But with the extreme drive for price reduction and the devising of certain improvements in the use of iron, it has had to yield its place in the low-priced cars which make up so large a part of present automobile output. Similarly, the great perfection of plastics has caused them to take the place of aluminum for distributor caps, horn buttons, and many small parts in automobiles and in similar uses elsewhere.

Another effect of the great rise in the price of virgin or primary aluminum following 1922 was to stimulate the growth of the secondary aluminum industry. For some years there had been a small business of collecting old aluminum, remelting it, and using it as a substitute for new aluminum. Secondary aluminum was not in good repute, and the annual output had been running to no more than 31 to 39 million pounds. The sharp rise in the price of virgin aluminum, however, placed the fabricators in an extremely difficult position. Caught in this dilemma of drastically rising material costs and lesser advances (in at least one case none) in the price of fabricated products, many independent aluminum fabricators now began to compromise with their scruples against us-

ing "secondary" metal. There was a marked increase in the activity of collecting, classifying, and remelting old aluminum and an outstanding improvement in the quality of the product turned out by the remelters.

From 33 million pounds of secondary metal coming into the market in 1922, the quantity rose in 1923 to 43 millions, in 1924 to 54, and in 1925 to 88.²⁴ For some years now the secondary industry has been turning out about half as much metal as the primary aluminum industry.

The net result of all these developments was that in 1925, with prices at their highest since the post-war depression, the production of aluminum in the United States was only 140 million pounds as against 138 million in 1920. The 1925 production figures do not fully give the measure of the Aluminum Company's business in that year because shipments to customers were about 30 million pounds in excess of the quantity of aluminum produced. In 1920, on the other hand, shipments were about 3 million pounds under the amount produced. Considering, however, the enormous development of the automobile industry between 1920 and 1925 a gain of only 35 million pounds in the consumption of primary aluminum²⁵ represented such a leveling off if not retrogression in rate of growth as this hitherto rapidly expanding industry had not before experienced.

In 1926 the Aluminum Company began a series of price reductions. By 1930 the quotation for ingot was down—about five cents—to twenty-three cents. Here it stood through the depths of the depression, though the company states that prices actually paid by the buyer

²⁴ Figures from U. S. Bureau of Mines.

²⁵ There was no change in net imports, which were approximately 30 million pounds in both years.

reached a point two or three cents lower, such discounts going largely to buyers of carload lots.²⁶ In 1934 reduction in the quoted price was again undertaken, and the changes then made—with some further slight adjustments in 1937—have now brought the price of aluminum down to 20 cents. In the last dozen years, therefore, there has been a total reduction of 8 cents, or more than 25 per cent, in the price of crude aluminum, in addition to some raising of the grade of metal on which the price quotations are based.

In assessing the significance of this more recent course of price reduction, it is necessary to bear two things in mind. First, this reduction of 8 cents was one cent less than the advance made during the preceding four years. Second, a considerable part of this reduction no more than reflected the lowering in production costs effected during this time.²⁷ Hence, much of the wide margin above cost that was established by the price-raising of 1922-25 still remains.

²⁶ In 1931 Aluminium Ltd., a Canadian corporation recently split off from the Aluminum Company of America but whose stock was held by the same small group, participated in the formation of the fourth aluminum cartel which in that year superseded the third, whose formation is discussed on p. 210. In two respects the new agreement was more fully implemented than the old. First, the capital stock of the cartel was used to finance the holding of surplus aluminum stocks in Europe. Second, the production as well as the sale of aluminum (in countries outside the United States) was controlled. The agreement specifically exempted from the production control any metal produced abroad for export into the United States. However, little aluminum was in fact imported into the United States during the depression, although the American quotation was well above the European price plus the tariff.

²⁷ In connection with the suit of the Baush Machine Tool Company against the Aluminum Company, the latter made public its costs for each of the years 1925-30 in each of its reduction plants. (*Baush Machine Tool Company v. Aluminum Company of America*, appellant, 79 Fed. Rep. (2) 217 (1935), Record of Pleadings, Testimony, and Exhibits.) The company's figures showed a reduction in cost amounting to 5 cents per pound over the period 1925-30. This just equaled the price reductions of the same period. It is generally understood that there have been further reductions in cost since 1930.

During the 20's the Aluminum Company made great extensions of its ingot capacity and went with tremendous vigor into the task of setting up rolling mills and other fabricating plants of a capacity and type calculated to meet the needs of industry for aluminum along many new lines. By this time, also, the researches of the Aluminum Company in improving alloys and in other lines were beginning to bear fruit. Finally, the Aluminum Company adopted the policy of making facts with regard to the technique of aluminum manufacture, the development of hydro resources, and the output and stocks of aluminum more accurately and widely known. As a result of this policy, as well as the discovery by consuming industries that the Aluminum Company did not propose to run up prices, a generally amicable and cooperative attitude has for the most part come to prevail in relations between the Aluminum Company and its customers.²⁸ Both sides have been working to put the metal in those places where it should go—with less being said or thought about the absolute level of prices.

It must be recognized that a very great stimulus to that lowering of prices which began in 1926 came from developments in Europe. Even before 1926, the American producer had begun to feel a revival of active European competition in the home market. But in that year the European producers formed a third cartel—

²⁸ Doubtless the company has been impressed by the amount of investigation and litigation which had been directed at it. Besides the investigations by the Federal Trade Commission and the Department of Justice the Aluminum Company had been subjected also to suits by private parties who alleged that the company, through its employment of monopolistic tactics, had injured them, and who sought to obtain the triple damages provided under the Sherman Act. One of these suits in particular was pursued with great vigor through two lengthy trials and two appeals, the second appeal resulting in a victory for the aluminum company by remanding the case back for possible retrial a third time. This left the matter just where it had started seven years before. Thereupon, it was settled out of court.

this time not including the United States or Canada—the announced purpose of which was to *reduce* aluminum prices. This reversal of previous cartel policy was in part due to European producers' fear of an invasion of Europe by the Aluminum Company of America. Just before this, the Aluminum Company had been making extensive acquisition of bauxite lands, water power, and aluminum and alumina works in many parts of Europe, in addition to earlier large acquisitions of bauxite in the Guianas and the acquisition of a new power site of great potentialities in Canada. Faced with the prospect of increased competition from the United States, and bearing in mind their own earlier experiences with high prices and over-extended capacities, considerations of prudence strongly impelled the Europeans to seek some means for systematically lowering their prices. However, this significant modification of policy was also in part attributable to a recognition on their part of the possibility of expanding domestic demands for aluminum and to a desire to curb the type of over-expansion that is stimulated by high prices in periods of active business. In 1926 and 1928 there were large price reductions abroad, and further cuts in 1930 and 1932 brought the European price to little more than half the price at the peak, and to a lower level even than that of 1922.

Obviously, the Aluminum Company of America could hardly have avoided making some reduction in prices immediately following 1925. At the same time, however, the very determination of the cartel to avoid involvement with the United States, and the increasing control over the activity of its members which the organization exercised, tended to free the Aluminum Company from serious interference as long as its prices did not present too great a temptation.

Besides the fact that the aluminum industry has since

early 1926 adhered to the practice of passing on the gains from further technological progress almost simultaneously with their occurrence it should be noted that the price of aluminum did not advance during the great up-surge of metal prices in 1928 and 1929, when the price of copper went to 24 cents and was long pegged at 18 cents. Similarly, when prices of metals in general were advancing inordinately in the spring of 1937, A. V. Davis, Chairman of the Board of Directors of the Aluminum Company issued the following statement:

On the important question of increased metal prices due to abnormal demand for all metals, Mr. Davis predicts that there will not be any run-away market in aluminum. He stated that the management of Aluminum Company of America is sympathetic with the effort to restrain advances in the prices of durable and consumer goods and that the policy of the Company for the remainder of 1937 will be to maintain present prices and make advances only if necessary to meet increased costs of labor and raw materials.²⁹

The reduction in the level of aluminum prices which began in 1926 was rewarded by a substantial growth in consumption. Despite the unsettling effects of the depression and the keener competition offered in recent years by such strong new contenders in the metal fields as monel, stainless steel, and magnesium, the production of aluminum in 1937, the year in which the price reached 20 cents, was more than double what it had been in 1925.

In this brief review of the price history of aluminum, we have for the most part passed by that phase of the price problem which has been responsible for almost all of the difficulties in which the Aluminum Company has been involved in its relations with other business firms and the government—the problem of differentials between the prices of ingot and of fabricated products, or

²⁹ Press release, April 8, 1937.

between those of semi-fabricated and finished products. This problem lies somewhat to one side of our main interest here. However, it should be noted that in a sense aluminum prices have been more reasonable than our discussion implies, because the further mark-up for fabrication (and most aluminum is sold in that form) has usually been moderate. In the great majority of cases, of course, the Aluminum Company makes a real fabricating profit; though not as regular as the profits in the production of the crude metal, it averages somewhat higher.

This brings us back to some further examination of the very competitive position occupied by this unique member among the family of metals. Aluminum, if it is to be profitable to its producers, must make its place as a volume metal like steel and copper, not a specialty for alloy, plating, or like uses which make the market for nickel, chromium, or molybdenum. And yet aluminum is, and apparently must remain, a relatively high-cost metal. After being concentrated from the ore to make alumina, it must be electrolytically reduced to pig, which for most uses must be remelted and skimmed before satisfactory ingot is produced. For most of its bulk uses the pure metal must be converted to an alloy (of which there are a large variety). Then it competes with steel. If it is necessary that the product shall not lose its characteristic non-corrosive quality as it gains strength in being alloyed, it must be coated with a thin layer of the pure metal. To compete with copper for electric transmission it must be rolled, drawn, stranded, and reinforced with a steel wire core. As foil, it competes with a great range of other wrapping and insulating materials, and in the joint-product of the foil plant—paint powder

or paste—it enters a field of vigorous competition.

This, with what has already been said about aluminum's battle in the automobile field and more that could be added as to its use in aviation, will emphasize the point made elsewhere that the resourcefulness of modern technology has given a new basis of competition which leaves few products in a sheltered position. For aluminum it means that if the company's great investment in ore and reduction properties is to be kept productive they must make a price appeal to fabricators in every field to which the distinctive qualities of aluminum, as mastered through continuous research, are specially adapted. As the matter is viewed by the vice-president of the company:

The engineers and designers and architects of America can be depended upon, in the years ahead, to take every one of the metals at its face value and use each where it will serve with the greatest efficiency and economy. Our common problem is to see that the various metals are ready in the needed alloys and forms and finishes, and that they work together in friendly fashion to produce machines and appliances and products that will give us all more for our money, in comfort, convenience, safety, health, and happiness. If this be war, let's all enlist!³⁰

It would have been desirable to supplement the analyses of oil and aluminum prices which have just been concluded with a similar discussion concerning steel. In view of the complexity of the issues which have arisen in connection with steel prices this task is too formidable for the present study. We present in Appendix E, however, some excerpts from the study made by *Fortune* of the United States Steel Corporation. The passages state many of the significant issues in a very suggestive way.

³⁰ S. K. Colby, "The Bloody 'Battle of the Metals,'" *Iron Age*, Oct. 1, 1936, p. 40.

GROWTH AND CHARACTER OF "BIG BUSINESS"
SINCE THE WAR

Every big corporation constitutes a case by itself for the purpose of studying price policy. Our skeletonized discussion of even two of them has threatened to exceed the space limitations of this book. A somewhat more generalized view of the matter may now be sought by noting the extent and character of large corporate development since the World War. A new wave of such activity surged up for a decade to its culmination in 1929. This was no doubt partly due to the greater judicial tolerance of such organizations indicated in the Supreme Court's exoneration of the U. S. Steel Corporation. Perhaps more of a causative factor is to be found in the great prosperity which existed in 1919 and most of 1920 and later returned and rose to the crescendo of 1928-29. At all events, there took place in this decade a merger movement in some ways comparable with that which occurred about 1900. The General Motors Corporation had been formed during the war (1916), but the real activity did not begin until the formation of the Radio Corporation of America in 1919. According to figures compiled by Thorp in 1929,⁴¹ the number of manufacturing and mining "mergers" of which record could be found in the press increased from 89 mergers involving 292 concerns in 1919, to 173 mergers involving 474 concerns in 1920. Checked in 1921 and remaining moderate in 1922, 1923, and 1924, the number of mergers again passed the 1919 level in 1925, and by 1927 and 1928 had reached figures of 207 and 221, involving respectively 678 and 687 concerns. Thorp's tabulation, being made in 1929, could not include the last year of the movement. The number of new com-

⁴¹ National Bureau of Economic Research, *Recent Economic Changes*, p. 184.

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panies formed to take over two or more old enterprises during the ten-year period 1919-28 was 1,268.

In addition to the concerns "merged," almost as great a number of other firms passed out of the picture as separate enterprises, because of their "acquisition" by some company whose identity remained unaltered so that the consolidation could not be considered as a "merger" in a technical sense. The total number of manufacturing or mining companies which disappeared because of "merger" or "acquisition"²² during the ten-year period 1919-28 was 5,991, distributed as follows:

1919	438	1924	368
1920	760	1925	554
1921	487	1926	856
1922	309	1927	870
1923	311	1928	1,038

Unfortunately no data have been compiled on the capitalization involved in these mergers and acquisitions, but the number of "mergers" in this decade was at least six times as great as the number of those which have been compiled (under somewhat different criteria) for the decade centering about 1900. There is close correspondence between the finding of Seager and Gulick to the effect that in 1904, at the close of the second wave of consolidation, the proportion of manufacturing capitalization controlled by the "trusts" was two-fifths, and the fact, as brought out in reports of the Bureau of Internal Revenue, that in recent years somewhat over 40 per cent of all manufacturing was carried on by corporations having a capitalization of 50 million dollars or more. (See note 34, p. 217.)

²² Thorp sought to exclude acquisitions of companies which were absorbed because they had failed, as in the case of plants bought at receivers' sales.

Thus it would appear that the big business movement of the 20's no more than re-established the relative position which such organizations had attained under the momentum of the earlier trust movement, but from which they had since tended to recede owing to the growth of the country's industry. Some few of the post-war industrial giants were the same corporations that had emerged in the earlier period. Others had developed by the natural process of growth from the fragments in which several of the earlier trusts had been "dissolved," whereas numerous others had resulted from the natural growth of business in the newer industrial fields, notably automotive, electrical, and chemical products.

Looking a little more closely, however, one perceives that there was a radical difference in kind between the 40 per cent of manufacturing industry which was dominated by "trusts" in 1904 and the 40 per cent which was carried on by "giant" corporations in 1929. For, though they often failed to achieve this end, the outstanding aim of most of the combines of a generation ago was to control the market, suppress competition, and raise prices. In the most comprehensive survey which has been made of the "trusts," Moody, writing in 1904, reached the startling conclusion that, of the 92 trusts which he regarded as most important, 26 controlled 80 per cent or more of their product; 31 others controlled 60 per cent; and an additional 21 (making 78 altogether) controlled 50 per cent or more of their product.²⁸ In the light of later knowledge, we can see that Moody was in error on various points, and the above figures probably represent an exaggeration of the proportions of their industries which the trusts owned. But there

²⁸ John Moody, *The Truth about the Trusts*, p. 487.

can be little doubt of the wide difference between the situation then and now.

The "giants" of today rarely approach either in actuality or in aims that degree of preeminence in their respective industries which was so generally sought for and often attained in earlier years. The typical pattern of business today is not one big concern, although there are a few outstanding cases of this kind, but a number of concerns, large and small,⁸⁴ which among them attain the pattern of coordinated centralization and decentralization already discussed in Chapters III, IV, and V. The very fact that so large a number of mergers were shown (pages 214-15) as taking place between 1919 and 1928 indicates that numerous concerns of intermediate size rather than a few gargantuan companies were being built up.⁸⁵

⁸⁴ The government's figures for 1933 show concerns of less than "giant" size (that is, having assets of less than 50 million dollars) carrying on almost 60 per cent of the manufacturing activity of the country. Of manufacturing corporations which submitted balance sheets to the Bureau of Internal Revenue (thus wholly excluding partnerships, individual proprietors, and corporations too small to report), 29 per cent of the aggregate assets of such corporations were in 1933 held by concerns having individual assets of less than 5 million dollars; 15 per cent by corporations having assets of less than 1 million; while over half of the total number of 82,836 which altogether, however, accounted for only 1.4 per cent of the total investment had assets of less than \$50,000. (U. S. Treasury Department, *Statistics of Income for 1933*, pp. 173-74.)

⁸⁵ Mergers may be quite different in their motivation and results as well as in the size of the entities involved. The mergers which characterized the period around 1900 were essentially promotional and designed through horizontal integration to effect monopoly control. Quite different is the relatively small merger which takes place as an incident to the normal technological as well as financial growth of a company concerned primarily with efficiency. The latter is well illustrated by a quotation from a recent corporation report:

"The Fiberloid Corporation organized in 1892 was a pioneer in plastics, and is now one of the leading factors in the industry. For many years it has been one of Monsanto's most important customers for inorganic acids, alcohol, solvents, plasticizers and other organic products,

The essential pattern of present-day American industry can be subjected to the most searching test, however, if we note the identity of the 200 largest non-banking corporations listed in 1932 by Berle and Means.³⁶ These corporations might be called the super-giants of the present order, for no one of them has a capitalization of less than 90 million dollars, while several exceed the billion dollar mark. Eighty-nine of these 200 corporations are in the manufacturing or mining field, which is the main focus of our interest here. But, far from this meaning that there is that number of virtual monopolies, 20 of these great corporations are in a single industry, petroleum. Another 11 are in the single industry, iron and steel. Four are in automobiles, 4 in tires, 4 in tobacco, 4 in coal (all four together accounting for only a small part of this great industry), 3 each in copper, meat packing, and paper. Thus 56 of the 89 largest manufacturing and mining corporations, having about 75 per cent of their total capitalization, are in nine industries where the whole field is most clearly split among a number of great companies—in addition to many other concerns of smaller size.

all of which are basic raw materials in the manufacture of plastics. In 1933 the Fiberloid management brought to our attention an opportunity to purchase an interest in their company, and a profitable investment resulted. Since then, the staffs of the two companies have worked in harmony on developments of common interest and formed a high mutual regard. Reflecting their belief that the future of the two organizations would be enhanced by a merger of facilities for development and manufacture, a contract providing for the acquisition of the assets of the Fiberloid Corporation by Monsanto Chemical Company was entered into, has been ratified by their shareholders, and it is anticipated the merger will soon be in full effect. . . . With Fiberloid's staff of capable specialists in the plastic manufacturing application and sales technique, backed by Monsanto's broad inorganic and organic chemical base upon which to build, Monsanto will be assured of a substantial position in the rapidly expanding field of plastics." (Monsanto Chemical Company, *Annual Report 1937*, p. 10.)

³⁶ *The Modern Corporation and Private Property*, p. 19.

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In each of six other industries, there are two corporations great enough to be on this list. In several of these cases, there is in addition to the two large corporations a considerable number of other companies of fair size. These 12 corporations are, in pairs, du Pont de Nemours and Company, Allied Chemical and Dye Corporation; National Dairy Products Corporation, Borden Company;⁸⁷ General Electric Company, Westinghouse Electric and Manufacturing Company; American Radiator and Standard Sanitary Corporation, Crane Company; American Locomotive Company, Baldwin Locomotive Works; International Harvester Company, Deere and Company (besides six other important companies).

This leaves just 21 of the 89 corporations, comprising only 14 per cent of their total capitalization, which do not have one or more close rivals within this list of corporations. They are:

Eastman Kodak Company	Singer Manufacturing Company
Radio Corporation of America	United Shoe Machinery Corporation
Corn Products Refining Company	American Can Company
International Match Company	American Car and Foundry Company
Koppers Company	Aluminum Company of America
Procter and Gamble Company	American Smelting and Refining Company
Union Carbide and Carbon Corporation	National Lead Company
American Sugar Refining Company	Pullman, Inc.
National Biscuit Company	American Woolen Company
Pittsburgh Plate Glass Company	Long-Bell Lumber Company
International Shoe Company	

The last two corporations named, the American Woolen Company and the Long-Bell Lumber Company, though their large size causes them to stand out are, however, little more than the most conspicuous units in very large, highly competitive industries. The Ameri-

⁸⁷ This pair involves more geographical specialization than competitive operation.

can Smelting and Refining Company, though unique in its special field, is paralleled by various other corporations which, though primarily engaged in mining, do their own smelting. Similarly, it could be said of many of the remaining eighteen corporations that though they are the biggest in their field, there are also other important companies, and the percentage of the total business which they carry on is much less than half. Indeed, there are only two, the Aluminum Company of America and the United Shoe Machinery Corporation, which are practically the sole producers, though two or three others approach this position as to some phase of their activities. For example, the Pullman Company operates practically the entire sleeping-car service and builds practically all the sleeping cars but is only one of many other car-building activities.⁸⁸ The Radio Corporation of America presents a somewhat similar situation in the field of international communication and has control of certain basic patents but meets with active competition in its other fields.

In fact, in industry generally, definition of the frontier between concerns and between commodities becomes much less simple under modern technological conditions than it formerly was. This is notably true in the rapidly developing fields of the chemical and electrical industries. Take for example the expanding group of products known as plastics—successors to celluloid and hard rubber. They are derived by diverse chemical processes from many source materials—wood pulp, cotton fiber, soy beans, milk, various minerals, and even air (as synthetic

⁸⁸ The International Nickel Company produces about 85 per cent of the world's nickel, but was not put on this list because, though its main market and much of its ownership is in the United States, it is incorporated and carries on its mining operations in Canada.

urea). They take on a variety of forms in which they become competitors of wood, metal, paper, glass, textiles, leather, stone, rubber, and other materials.

Technological developments such as these give new point to the economist's "principle of substitution" and bring it about that many of the concerns which we listed on page 219 as having a rival roughly comparable in size and strength have in fact equally keen competition on special products from a wide variety of other companies, large and small. Thus while Du Pont and Allied Chemical and Dye make a general pair, Du Pont is in its important plastics division in competition also with American Cyanamid, Monsanto Chemical, Eastman Kodak (with its acetate film), the rubber companies, and numerous others. An essentially similar situation obtains in other of its departments, such as rayon, paint, and explosives.

The man who today tries to fence in an industrial highway and exact an exorbitant toll from those who would travel this road to consumer satisfaction is in danger of defeating himself. Under modern conditions of technology, applied science is likely to find other methods of progress. The chemist will build a detour around him, the physicist will drive a tunnel under him, or a biological overpass will be devised. The implications of this technological development are discussed in the closing chapter.

CHAPTER X

GROUP SOLIDARITY AND GOVERNMENT PARTICIPATION IN PRICE-MAKING

What has been said in Chapters IV and IX concerning the rôle of the large corporation in our modern business system calls attention to the way in which administrative functions are now concentrated in the hands of executives of large business concerns. At these centers, executive authority coordinates the work of thousands or even hundreds of thousands of workers. For better or for worse these executives of big corporations become economic planners and shape price policies of far-reaching consequence to the whole economic system. But smaller business units also seek to deal with many of their problems in a somewhat similar way, gaining through trade associations the advantages of concerted action while yet retaining the independence of separate organization and operation.

In some lines of business, the membership of the trade association consists entirely of small business concerns, all fairly equal in size and influence. Others consist of small, medium-sized, and very large concerns—as in the Iron and Steel Institute or the Petroleum Institute. Reference was made in Chapter IV to the fact that both these types of associations bring together the separate units within a given field of business, not only to provide certain services on a mutual basis, but also to implement various types of joint action which are based upon the solidarity of the group. Whether or not there is as true a solidarity of interest where large and small concerns are joined in the same body, it at least presents the possibility that the small man's voice may be heard

along with that of the tycoons on matters touching the industry.

Such association of the executive group is potentially, and often in fact, a powerful determinant of the way its members think and act on major matters of business policy. Central to such thinking and acting is price policy, with its repercussion on production. When these associations, whether of big or of little business men, seek to make the organization coextensive with the frontiers of the whole trade, anything which they may do with reference to prices attains increased importance.

STATISTICS AND ACCOUNTING AS GUIDES TO PRICING

Reverting to what has already been said (pages 139-41) about the kinds of service performed by trade associations for their members, we find two whose significance for their possible influence on the price-making action of members is outstanding—(1) the gathering and dissemination of statistical information concerning the business and (2) accounting activities, particularly the development of cost accounting principles and practice.

In the expansion and quickening of the trade association movement which came about some twenty-five years ago, great emphasis was placed on the idea that if business was to be both competitive and profitable it must be conducted in the light of the fullest possible information. This view was based on the classic doctrine that economic men will act to promote their own interest if they know the facts about the supply and demand situation, and that through this promotion of individual interest the general welfare will be most surely and steadily advanced. Hence the major effort of many trade associations has been directed to assembling current information

as to plant capacity, operating ratio, volume of shipments, size of stocks, and prices at which sales are being made.¹ This information is put together in such form as the association officials or staff believe will be most enlightening to members and disseminated to them in printed or mimeographed periodical reports, often supplemented by special responses to individual inquiries.

So long as an association keeps to the field of neutral reporting of facts or of acts which have already transpired, the product of its statistical service can hardly have any effect on prices other than to give a fuller or more accurate basis for decision by the individual member as to what he will do. But, "suppose that instead of merely circulating the dry statistical summaries, the association should add an editorial department to its weekly bulletin, and employ an editor with a literary bent to soliloquize on matters of interest to the trade. In his editorials he takes occasion to comment from week to week on conditions in the trade, as revealed by the statistical summaries. On one occasion he may point out that orders during the past month are shown to have exceeded shipments by 20 per cent, with a consequent stiffening of prices. On another occasion he may comment on the fact that production and stocks on hand are at record figures, whereas for the past few weeks new business has shown a tendency to decline."²

¹ Of 330 associations replying to a recent questionnaire of the trade association department of the Chamber of Commerce of the United States, 236 reported that they were "compiling and disseminating statistics of interest to the industry." The number reporting accounting activities was 157. Department of Commerce data covering 1,600 trade associations indicate that about 300 of them carry on statistical activities. Naturally these activities are more likely to be found in the larger and stronger associations.

² Gerard C. Henderson, "Statistical Activities of Trade Associations," *American Economic Review Supplement*, March 1926, Vol. XVI, No. 1, p. 221.

No categorical answer can be given as to how much influence this sort of statistical presentation and interpretation has on the actual course of action of any business man. The Federal Trade Commission has examined the problem over a period of some years and finds the question difficult to answer in any general terms, though it has issued "cease and desist" orders in a considerable number of specific cases. Likewise, numerous complaints against trade associations have brought them before the courts. In examining a variety of these concrete situations, the United States Supreme Court has in some cases been convinced that their restrictive effect was so great as to make them illegal. In the *American Column and Lumber Company* case, the Supreme Court not only took account of editorial comment in the association bulletin but also of the fact that in meetings of the association, speakers frequently discussed the reports of production "with the implication, not disguised, that higher prices must result."³ Soon thereafter in the *Linseed Oil* case,⁴ the Court concluded that the defendants were "associated in a new form of combination and are resorting to methods which are not normal . . . its necessary tendency is to suppress competition . . . to destroy the kind of competition to which the public has long looked for protection." The Court emphasized the point that the activities of this association were not limited to the mere exchange of information but that the members became parties to an agreement which took away their freedom of action by requiring each to reveal to all the intimate details of its affairs. All subjected themselves to an autocratic bureau, which became organizer and general manager, paid it large fees and deposited funds to insure their obedience. Each sub-

³ *American Column and Lumber Company v. U. S.*, 257 U. S. 377 (1921).

⁴ *U. S. v. Linseed Oil Co. et al.*, 262 U. S. 371 (1923).

scriber agreed to furnish a schedule of prices and terms and adhere thereto—unless more onerous ones, were obtained—until prepared to give immediate notice of departure therefrom for relay by the bureau. Each also agreed, under penalty of fine, to attend a monthly meeting and report upon matters of interest to be there discussed; to comply with all reasonable requirements of the bureau; and to divulge no secrets.

These overt acts designed to secure “concert of action and harmony of policy” were not found by the majority of the Court to exist in the subsequent *Maple Flooring and Cement cases*.⁵ The mere gathering and dissemination of statistical information was upheld even if the members of the association met and discussed such information, “without, however, reaching or attempting to reach any agreement or any concerted action with respect to prices or production or restraining competition.” Whatever the soundness of this view as a legal interpretation of the Sherman Anti-Trust Act, it is hardly possible to doubt that the influence created by the dissemination of statistical information and the discussion given it in association conferences has in most cases been in the direction of price maintenance. To many economists who have studied the problem, the Cement Association seems as good an illustration of this tendency as could be found.⁶

⁵ *Maple Flooring Manufacturers' Association v. U. S.*, 268 U. S. 563 (1925); *Cement Manufacturers' Protective Association v. U. S.*, 268 U. S. 582 (1925). Professor M. W. Watkins suggests (*American Economic Review Supplement*, March 1926, p. 235) that “the change in general business conditions accounts for the opposite view taken in the earlier than in the later cases.” That is, prices in general were rising rapidly in the period 1918-20 when the Court came to the conclusion “that the united action of this large and influential membership contributed greatly to the extraordinary price increase,” whereas prices in general were falling during the later period when the Court found “no proof that the activities of the [Maple Flooring Association] had affected prices adversely to consumers [but] undisputed evidence that the prices of members were fair and reasonable.”

⁶ See Frank A. Fetter, “Economics and Portland Cement Prices,”

In this connection, it is interesting to turn back to the document which constitutes the most extended and explicit statement of the general philosophy on which this statistical activity of trade associations was based. This was Arthur Jerome Eddy's book, *The New Competition*, published in 1911. In it Eddy advocated only "open price associations" which should report data of transactions actually completed, with no comments as to future trends or advice as to action. However, he was very clear as to the kind of price-making situation that he believed and hoped would result if such information were to be made generally available. This price philosophy ran as follows:

In his *social* relations man has made vast strides in advance of the bald biological proposition, progress is a survival of the fittest. In his commercial and industrial relations he is in that savage condition wherein the "destruction of the weak and helpless" is carried out, not only "voluntarily and deliberately" and "with Spartan firmness," but with precisely the satisfaction a Roman audience watched one gladiator slay another, or a wild beast devour a Christian.

A distinguished professor says: "The big company has a right to beat the little one in an honest race for cheapness in making and selling goods; but it has no right to foul its competitor and disable it by an underhand blow." [John B. Clark, *The Control of Trusts*, p. 15.] That is the theory of the thorough-going evolutionist—the "big fellow" has the right to survive because he has the brute force, the "little fellow" must and should go to the wall in order that the "fittest" may live and the commercial race be improved! Strange how these crude propositions drawn from natural development persist in the field of economics long after they have disappeared from the field of ethics. . . .

The human law should be not the survival of the strong, but *the survival of all*, of the best there is in all, and, often times,

there is more of good, more of real value to humanity in the weak than in the strong. The decrepit body may be of little use to nature, but to mankind it may possess a priceless content, and even though the aged are a burden from a material point of view, they are needed to develop those qualities of sympathy and unselfishness, of devotion, of love that lift men toward the angels.⁷

Eddy deprecated the movement toward corporate consolidation not because it suppressed competition but because it made competition too keen. "While the large corporation and the trust," he said, "are the natural results of competitive conditions, each is simply a more powerful competitive unit; competition, if curtailed at all by the organization of a trust, is curtailed only for the time being, soon it is keener than ever, and consolidation may follow consolidation to lessen its disastrous effects, or producers, large and small, may form associations to control in a measure the competition."⁸ His proposed "associations of competing manufacturers and dealers to lessen competition and advance prices" would moderate the pace that was being set by the leaders. In the industrial race that he observed about him, Eddy could see "no real, no true competition. The runners are not competing one against the other, but each is running against himself, *doing the best he can regardless* [italics ours]. At the end when records are compared they find that both expended a large amount of energy needlessly—the winner in running faster than necessary, the loser in making a hopeless contest."⁹ We do not mean to sug-

⁷ *The New Competition*, pp. 14-15, 16.

⁸ The same, p. 51.

⁹ The same, p. 81.

"Whatever the desire that through open price plans the anti-trust laws could be avoided, there was clearly the hope on the part of some manufacturers that open prices would eliminate fraud and misrepresentation by those buyers who sometimes mis-stated the price offers made to them, and by those manufacturers who sometimes made

gest that Eddy's statements reflect accurately the views which are now entertained by trade associations in general with reference to statistical activities. At the same time he did enunciate a view which was widely held at the time when he wrote by that group of corporate executives who were making most aggressive efforts to develop monopolistic control. To an unfortunate degree, his writings and activities tended to cause the same sort of economic philosophy to color the thinking of officials and members of trade associations.

Turning now to the accounting department of the trade association, we find one of the most useful services which such bodies maintain. By developing uniformly high standards of accounting and perfecting methods peculiarly adapted to the needs of a given type of business, it may do much to raise standards of management. This has been noticeably the case where association serv-

untrue statements to buyers concerning their own prices to other buyers and concerning their competitors' prices. It was further hoped that these plans would destroy 'viciously' low bidding by competitors who stood no chance of securing a contract but who bid low merely to harm their competitors. Secret prices, rebates, and concessions, it was believed, might also be lessened or eliminated by open prices.

"While it is probable that Eddy saw in his proposed open price associations essentially an informational device which, if it affected prices at all, would do so through improving knowledge rather than by stimulating collusive control, there is little doubt that, with the opportunities for direct control limited by the anti-trust laws, some manufacturing groups were attracted into organizing open price associations in the hope that by means of such associations they could achieve group control of prices. Of somewhat different significance was the feeling on the part of certain manufacturers that if knowledge of prices by competitors were common, producers would in many instances refrain from cutting prices because of the fear that all would follow suit." Leverett S. Lyon and Victor Abramson, *The Economics of Open Price Systems*, pp. 14-15.

A full third of the volume quoted above is devoted to outlining a form of open price system which the authors regard as "socially useful." By this they mean "one which gathers and disseminates data concerning those [market] factors accurately, completely, and with dispatch, to as many buyers as appears feasible and useful" (p. 92).

ices have been made available to small local concerns accustomed to use only simple or crude systems of book-keeping of a "home-made" character. But the more expert and analytical the attention given to business records, the more significant does the product become from the standpoint of appraising operative results and of guiding policy.

Cost accounting departments of trade associations have sought to stimulate cost recording by their members, to inculcate better methods, and to standardize procedures in order to insure comparability of results. But in formulating these procedures the accountant must decide what method of calculation is to be used, what costs are to be counted, how they are to be allocated, and what principle is to govern when estimates (such as rate of depreciation) must be made or values imputed to goods or services which do not pass through a market. The formula of unit cost which results, if taken in any given case as a literal answer rather than an analytical pattern, may lead to serious exaggeration.

It is but natural that the man who makes a price lower than the bulk of his fellows will be suspected of having failed to count all his costs. Often this is true, and the trade association which corrects such miscalculations is doing a real service to sound business. But it is natural also for the accountant who starts on the quest for theoretically complete costing to end by including items and employing rates of return as economic necessities which are in fact only expressions of commercial wistfulness.

Any way of handling particular elements of cost which the trade association suggests to its members or incorporates in standard forms which they adopt tends to influence their price policies. But a still more significant effect will be produced if it computes and disseminates average

or "normal" figures for individual items or for the finished product. Thus for example an association may compute the unit cost at which certain raw materials, indirect labor charges, interest rates, or other items are charged. This is particularly significant in the case of overhead charges for plant: the percentage of rated capacity which is taken as "normal" operating ratio is capable of causing this charge to vary within wide limits. The same may be said of the rate of return on capital which is included in costs.

Finally, the association may work up some theoretical norm or practical average of costs for product ready for market (also distribution charges). The mere dissemination of such figures may suggest to the member that if he sells below this figure he will be losing money and heading for bankruptcy. Beyond this, suasion may be brought to bear on the member to make him observe such minima, or disciplinary measures invoked to secure his compliance. Such practices have called forth "cease and desist" orders from the Federal Trade Commission and have been curbed by the courts. But it is not possible to eradicate all the subtle forms of pressure if an association conceives price maintenance as an important reason for its existence. It has been suggested by the Federal Trade Commission that the very looseness of the restraints and the insidiousness of the methods for carrying them out gives them their effectiveness. Though approving accounting service, it says concerning this danger:

Among the many legitimate kinds of trade association activities which may easily and imperceptibly pass over from the stage of useful service to that of abuse and even illegality, few are more prone to this sort of transition than cost accounting work.¹⁰

¹⁰ Federal Trade Commission, *House Furnishings Industries*, Vol. I, p. 176.

What is perhaps most significant for the purposes of our present analysis is that the methods of cost accounting usually employed are static and retrospective. That is, they look back at the technique, outlays, and volume of output under prevailing conditions rather than forward to what could be attained if dynamic changes were introduced.

The trade association movement is much too complex and varied to be easily assessed as a factor in price-making. What has been said thus far points to the fact that many such associations provide a focus or clearing house for information on matters which underlie price-making and, to varying degrees, furnish interpretation of these facts and promote discussion among the members as to their meaning or the line of action to which they should point. We have noted in the second place that regulatory and judicial bodies that have been called upon to appraise actual results have at times come to the conclusion that this centralizing of certain administrative activities has lessened the force of competition or conduced to the maintenance of high prices.

While these findings in particular instances are not to be generalized into a sweeping conclusion that trade associations are necessarily and always agencies of price maintenance, a word may be said as to the general logic of their operation. A characteristic feature of the trade association is that it brings the little men of the business into a position where their voices can be heard and their interests protected. We must not conclude from this fact alone that the result will necessarily be higher costs, lower standards of efficiency, or slowing the rate of economic progress. Earlier chapters have clearly recognized the fact that the small company is in many situations

the efficient company and the pace-maker in competition. Since membership in the trade association is ordinarily open to all producers in the given field and since the association is supposed to give individual members a voice proportionate to their number, it is likely to find itself forced into a position of protecting the weak and inefficient, who turn to it just because they feel a need of protection.

The situation as to trade association philosophy is somewhat analogous to that of labor union philosophy. The union has a tendency to slow down its most skilful and energetic members to the pace of the laggards rather than to stimulate the whole group to the highest productivity of which its members are capable. If the trade association is one in which the largest and most efficient companies are joined with others of less efficiency or competitive vigor, there is considerable likelihood that the result will be that "friendly competition" which Judge Gary established for U. S. Steel and disseminated through the Iron and Steel Institute, or that kind of industrial footrace which Eddy advocated. Human nature being what it is, the straggler insists that the column wait for him; but even the leader is prone to find such a course attractive. If a company has established itself in a strong position because of its lower cost, pressing this advantage further will tend to increase its size at the expense of less efficient firms. This will not only bring the resentment of those who lose business or who are perhaps entirely displaced; it may even enlist adverse public opinion and perhaps government action on their side. Hence, political influence, both within the organization and outside, tends to encourage the concern whose growth is based on superior efficiency to take

things easy and accept a relatively wide profit from the existing volume of business rather than to draw more of the trade into its low-cost orbit.¹¹

In pointing out this as a potentially disadvantageous kind of trade association influence, we must not ignore constructive possibilities. Since the trade association tends to establish a clearing-house of trustworthy information and to focus the administrative function of developing a policy for the industry as a whole, it is also possible that it may devise the most comprehensive and far-reaching plans for the industry's development. One of the more broad-visioned executives from the trade association group presents the constructive possibilities of their work as follows:

An institution will make permanent progress, not by mere negative omission of the acts which the law of the land prohibits, but by the constructive development and application of those economic forces which the progress of the industries and the public welfare demand. The advice of the lawyer . . . is, of course, necessary as a safeguard against overzeal and abuse. But this is a service of subtraction. Whence then is to come the guidance and the impetus through which cooperation among competitors through trade association may make the maximum contribution to economic progress? I am not belittling the service of the lawyer to the trade association movement when

¹¹ "Trade associations in the United States have not, so their spokesmen affirm, been the cause of as much 'economic stability' attempts to control production and prices as have been such monopolistic factors as holding companies, bank-controlled groups, interlocking directorates, patent controls, financial dominance by a few leading firms in an industry with 'gentlemen's agreements,' and special tariff and tax law which can result in discrimination against normal competition and in unwarranted burdens on the consumer. The average American trade association is not strong enough to 'control' its industry. . . . Price-stabilization problems . . . are but a minor part of the activities of the average American trade association." Calvert Judkins, "Trade Associations and the Recent 'Price Control' Legislation," in *Business and the Robinson-Patman Law* (Benjamin Werne, ed.), pp. 164, 165.

I, who am both a lawyer and an economist, say that the constructive future of trade cooperation is in my judgment to be found, not by the lawyer, but by the economist.

The Secretary of Commerce [Mr. Hoover] has probably contributed more than any other citizen to the forward-looking policies of American industries which are gradually being worked out through their respective trade associations. The progress in this direction has, I believe, been due primarily to the fact, obvious and precious to us who are directly identified with trade organization activity, that vastly greater consideration is being given to the public welfare and public service aspects of industrial and commercial policies.

I know of scores of . . . associations in American industries and trades whose activities have been beneficial to buyer and seller, producer and consumer alike, which also have been involved in no litigation and hence had no notoriety, whose constructive activities indicate that the reins of control of American business policy are more and more being assumed by a forward-looking leadership, which, by cooperation between the producer, distributor, and consumer, is seeking in good faith to give to the public the benefits of competition and to the industries and trades themselves the benefits of cooperation. This promise for the future will be realized through trade associations, not so much by keeping their eye upon the Sherman anti-trust law and the Federal Trade Commission Act, but by a consideration in good faith of public interests and the public welfare, and by a determination to share fairly with the public the benefits of lawful cooperation.¹²

There seems to be a tendency for trade association officials and members in recent years to see more clearly these possibilities of progressive action. Some of them are coming to realize that using their associations for strong-arm price boosting is short-sighted and harmful. If these possibilities of developing sounder price policies are to be realized, however, the associations must broaden their research activities from the technological and narrow

¹² Wilson Compton, *The American Economic Review Supplement*, March 1926, pp. 227, 229, 231.

commercial basis of the past, to include true economic research, whose objective is to discover how industry may function to the greatest benefit of the people as a whole, rather than to protect the immediate interest of any individual, concern, or group.

Furthermore, consideration of this public interest and attainment of the public welfare would require of the trade association the continuous discipline of any of its members who long to take the easy road to fat, short-run profits. It would entail such price policies as would lead to the progressive elimination of those units which are at the margin of inefficiency.

Whether any body operating on a basis of voluntary membership and democratic control can carry the principle of self-government in industry to this plane of social efficiency remains to be seen. There are those who are ready on the basis of present experience to answer "no" to that question and to say that if such ends are to be achieved, it must be done through the regulatory power of government.¹⁸ But whatever government may do within the sphere of price-making can in the nature of the case no more than express the economic philosophy of legislators and the administrative officers in whose hands the general mandates of the law take on day-to-day operative reality. We may look therefore at what the government did in the field of industrial price-making under the National Industrial Recovery Act.

NRA MADE TRADE ASSOCIATIONS AN ARM OF GOVERNMENT

Earlier federal laws touching prices had centered on the attempt to prevent combinations and promote

¹⁸ Arthur Burns, *The Decline of Competition*, Chap. XII; and C. R. Daugherty, M. G. de Chazeau, and S. S. Stratton, *Economics of the Iron and Steel Industry*, Vol. II, Chap. XXIII.

competitive pricing, but made no effort to dictate what prices should be. The National Industrial Recovery Act took a different lead. Passed as an emergency measure in the midst of a profound depression, it sought to stem the tide of price decline and raise the purchasing power of the masses. It was part of a larger program which sought something like the 1926 level of general prices as an aid to business recovery.

A system of "self-government for industry" was to be set up under "code authorities." This was described in congressional hearing and debate as "a rationalization of competition," the "civilizing," or even the "purifying" of competition. The declaration of policy with which the act began stated it to be

the policy of Congress . . . to provide for the general welfare by promoting the organization of industry for the purpose of co-operative action among trade groups, to induce and maintain unified action of labor and management under adequate governmental sanctions and supervision, to eliminate unfair competitive practices, to promote the fullest possible utilization of the present productive capacity of industry, to avoid undue restrictions of production (except as may be temporarily required). . .

The NRA development built directly on the existing trade association movement. This is to be seen in the large place given those bodies both in the initiation of industry codes and in their subsequent administration. As to the power of initiation, the law specified industrial and trade groups to be one agency by means of which code regulations could be initiated. In practice, this proved to be the only method employed. Proposals for specific forms of governmental action came extensively from members of industry who knew best the many specific complaints against existing conditions. Trade as-

sociations were an important vehicle for expressing these proposals. They saw this as an opportunity of strongly extending their doctrine of "self-government in business," and it was believed that their support would be an important aid in securing effective enforcement of industrial regulation.

The immediate effect of relying on industry groups to initiate codes was to increase the number of such trade organizations and to enlarge their membership. It was through such membership that individuals and groups within industries saw their opportunity of influencing code provisions. Hence the incentive to join associations was stimulated. Moreover, areas of industrial activity not earlier organized under trade associations became so organized as a result of the Recovery Act. This resulted from the fact that certain industries saw in the NRA advantages in national organization which had not before existed. In such organizations their chances of influencing code regulation to their advantage were increased. In some cases the creation of new associations arose essentially from this desire for more effective self-expression. In other instances the promotive activities of the NRA were important in the formation of the new group. In addition to wholly new associations there were formed a number of federations and other national amalgamations in industries where only local associations had existed before.¹⁴

The second way in which the character of trade asso-

¹⁴ On the other hand, there was a "separatist tendency," especially as experience with the Recovery Administration advanced, which led minority groups of large industries to become self-expressive units as such groups found that they had special interests which might not be adequately promoted by the larger association. See Leverett S. Lyon and others, *The National Recovery Administration: An Analysis and an Appraisal*, pp. 141-45.

ciations was changed and their powers enhanced under the NRA was through the considerable identification of a trade group with the administrative agency for each code—the code authority. Although methods by which code authorities were chosen varied widely, the trade association influence was strong. “A survey covering 400 approved codes shows that 218 of the 400 place trade associations in a dominant position, with minority representation for non-member associations in 101 of the 218 instances.”¹⁵ In certain cases the identification of the association with the code authority was complete. In an analysis of some 63 cases in which trade association power was outstanding in an administration, it was found that in 28 instances the code simply named a single association, or its board of directors or executive committee, as the national code authority. Speaking in more general terms of the use of business groups in its administration it was said of the NRA some twenty-two months after its origin: “As a means of implementing its legislative acts the NRA has approved the establishment of 585 agencies of industrial self-government (code authorities) under which there are several thousand regional and division subordinate agencies.”

Turning now from the part played under NRA by the industrial groups and their trade associations, we ask: What of governmental participation in this joint enterprise? Administrative authority was vested directly in the President but exercised through a Recovery Administrator¹⁶ subject to the general approval of an Industrial Recovery Board consisting of the secretaries of Commerce, Interior, Agriculture, and Labor, the Attor-

¹⁵ The same, p. 166.

¹⁶ Until the reorganization of Sept. 27, 1934, when a National Industrial Recovery Board was substituted for the single administrator.

ney General, the Director of the Budget, the Chairman of the Federal Trade Commission, and the Recovery Administrator. Though presumably created as a general policy board, this group of busy government officials never functioned effectively in that capacity. "During the early months of code negotiation, the special board did, however, conduct a series of price studies designed to formulate NRA policy relative to price control devices in codes. No policies were arrived at or promulgated, however, and the Board was soon lost in the fast-shifting NRA scene."¹⁷

There were also three other advisory boards, namely, Consumers', Industrial, and Labor. The latter two functioned as special pressure groups for their respective interests. Of the Consumers' Advisory Board, the Administrator said: "The thought in choosing this board was to get wide regional representation by devoted people who have interested themselves in this problem and are willing to give their time and effort to this vital work." In the nature of the case, however, the consumer's interest was more inchoate than that which expressed itself through the industrial and labor advisory boards and lacked support from any similar well organized and articulate constituency.

During the process of code-making, proposals were, as we have seen, initiated by the various industry groups. The deputy administrator in charge of the actual work of code negotiation advised with the code committee of the industry but was himself (with his legal advisers) virtually the draftsman of the code. He in turn reported his action to the Administrator for approval and received from the Administrator instructions as to policy and procedure. The sheer volume of work involved in these ne-

¹⁷ Lyon and others, *The National Recovery Administration*, p. 44.

gotiations soon called for increase in the power delegated to deputies, and acceptance of a code by the President or even the Administrator in many cases was purely nominal. What "got by" depended largely on the adroitness and aggressiveness of the particular industry represented and the individual views of the deputy administrators, modified by their understanding of the policies of the Administrator and of the President rather than by any carefully reasoned application of economic principles to the issues involved. There was, however, the challenge of the Consumers' Advisory Board.

Faced by the extreme pressures of an acute depression period, NRA elected to follow the old rule of the frontier: "Shoot first and ask questions afterwards." In the words of the Administrator himself: "The choice was between academic conjecture and action, and the decision was for action."¹⁸ A Research and Planning Division had been established at the beginning and it entertained ambitious, not to say grandiose, plans for broad industrial studies to be used in the guidance of code-making. But the very scope of these plans made them difficult if not impossible of accomplishment in the rush of actual administration, and this body for a time dropped into the background of the picture. Relatively late in NRA's history broad issues of policy-making such as had been contemplated in the early phase of the Research and Planning Division were again recognized by the appointment of an Assistant Administrator for Policy, with three deputy administrators. Even then, enormous difficulties were encountered in any effort to make broad economic considerations take the place of group interests in control of practices affecting prices.¹⁹ The life of the

¹⁸ *NRA Release No. 2993*, Jan. 25, 1934.

¹⁹ Lyon and others, *The National Recovery Administration*, Chap. XXIX.

NRA experiment was too short to give any conclusive answer as to how far the participation of a government agency in industrial organization might ultimately be based on professional study of the broad issues involved and made effective in promoting sound and constructive price and production policies.

As to the influence of the NRA on pricing policies in industry during its brief emergency career, two important types of provisions are to be noted: (1) those which, if properly implemented and enforced, had a tendency to establish minimum prices; and (2) those which could be used to limit production. Seventy-nine per cent of the codes contained provisions of the former type.²⁰ About half of the codes for the larger manufacturing industries (those having 25,000 employees or more) contained provisions of the latter type.²¹

The mere presence of price and production control provisions in a code by no means meant that such regulations were actually enforced in the industry. In many instances no efforts were made by the code authority to fix prices or limit production, even though powers to do so were granted in the codes. In other instances, in which controls of this character actually were undertaken, they broke down repeatedly despite active efforts to enforce them, and despite the presence in the codes of many provisions designed to forestall evasion.

²⁰ For a general tabulation of the price provisions of codes see Lyon and others, *The National Recovery Administration*, pp. 570-73. For a general discussion of their significance, see the same, Pt. V.

²¹ Provisions contemplating control of production were much more common in the earlier than in the later codes. They were of four main types: (1) those permitting restrictions on the volume of goods produced; (2) those limiting the length of time which machines or plant could be operated; (3) those regulating the installation of added capacity; and (4) inventory controls. A number of codes went no farther than to authorize the code authorities to prepare recommendations.

On the whole, it seems fair to say that in many industries the powers exercised by code authorities under the price and production control provisions of the codes tended strongly to raise the price level.²² As respects the production control provisions taken by themselves, the fact that so many of the earlier and more important codes contained them shows that the idea of restricting output held a very prominent place in the plans of organized industry at that time. But though the thought that they were going to have this protection doubtless encouraged price raising, the production control provisions as it turned out did very little in the way of directly limiting total production.²³ In many instances, however, even though there was no hint of overall curtailment, individual business men or certain sections of industry were seriously circumscribed as respects their discretion in matters of price and production policy, and this tended

²² For further discussion, see the same, pp. 620-23.

²³ Many of the production and capacity control provisions of codes required action by the Administrator before their provisions could be finally effective; and all of them were subject to the granting of exemptions, or to modification or cancellation by NRA. With the passage of time the NRA became increasingly reluctant to bar anyone who really had a market for his productive activity; nor were all of the code authorities desirous of exercising such rights to restrict production as they might have claimed. In several of the codes where production controls were of most importance, the administration consciously sought to increase rather than decrease the total volume of production—in the interest of increasing employment. Thus in the case of lumber the early production quotas were set definitely above anticipated demand, while in the case of copper and oil a successful effort was made to check the liquidation of stocks, and so hold production on a comparatively high level. In other codes, generally, limits on production, though they might be substantially below the capacity of industries, were well above both the depression lows and any demand which could develop under the existing price and market situation. Quite a number of restrictions on machine or plant hours had no other function than to make it easier to enforce the limitations on the hours of labor. The Atlantic mackerel industry represents one case where production for a time at least was somewhat checked.

to block the reorientation of industry in more efficient and hence low-cost and low-price directions.²⁴

It must be recorded in addition that there were under the NRA some instances of code provisions apparently designed with a purpose and having an effect on pricing policy quite different from that discussed above. Found in many codes were provisions the effect of which, while they cannot be clearly traced, tended in all probability to facilitate the more effective operation of competitive forces. For example, provisions of *Office Memorandum 228* (trade practice policy), designed to facilitate the acquiring of full knowledge as to trade conditions and the maintenance of mobility for the individual concern in adjusting its operations in the light of this information, found their way into many codes. These provisions had no objective of limiting individual discretion but merely of implementing it to desirable social ends. The achievement of these objectives involved no impairment of the

* In many industries certain of the most efficient plants or those which habitually sold at the lowest prices and operated the closest to capacity were curtailed in their operations. In other industries a section which dominated the code authority found means of circumscribing the activities of their competitors in another section. The great cotton textile code had the effect of setting back the development of the industry in the South and stimulating a short-lived revival in the North.

These observations on production control are based on three studies made by Horace B. Drury while on the staff first of the Research and Planning Division and then of the Division of Review of NRA: *Administration and Effects of Production and Capacity Control Provisions in NRA Codes* (May 1, 1935, 214 typewritten pages), a classification and examination code by code of what actually happened under the production control provisions; *Production and Capacity Control under the NRA* (Nov. 27, 1935, 300 typewritten pages), a more general review of background and results, with special studies covering lumber and several other industries; and *Production and Capacity Control in the Ice Industry under the NRA* (March 1936, mimeographed and available for distribution, 212 pages). See also Louise E. S. Eisenlohr, *Case Studies in Production Control, NRA Work Materials No. 66* (March 1936, mimeographed and available for distribution, 36 pages).

powers and responsibilities which had earlier been characteristic of organized trade groups, except that the capacity of these groups to require the submission of business data and to finance the collection and dissemination of such data and otherwise improve the knowledge of business men, was greatly increased under the NRA.²⁵ The general effect of these activities of trade groups was not to enhance their controls over prices and production, but rather to provide individuals with a better basis for making their own decisions concerning these matters.

The significance of the NRA on the current powers of organized trade groups over pricing policy are not easy to assess. Following the Supreme Court's decision invalidating the Act, the powers of trade groups were severely curtailed. Many new groups which had grown up under the NRA went out of existence. The older and more established ones in the main continued, though with less ambitious objectives in the way of industry control. A few of those which owed their origin to the NRA remained in operation. The most important effects of the NRA on the activities of organized trade groups with respect to pricing policy, however, lie in the vestiges

²⁵ In many instances in which the association acted as the administrative agency under a code, it was given power to compel the payment of assessments. The NRA Budget Director, on the basis of approved code authority budgets, estimated that total expenses of code authorities ran to more than 40 million dollars within the first fourteen months of NRA operations. These expenditures were markedly different from the limited budgets under which associations usually operated. Moreover the power of the code authorities to assess funds relieved association efforts from dependency upon constituents for voluntary support. Action could therefore be guided more exclusively by the policies which the administrative heads found desirable, circumscribed of course by the provisions of the codes. Research and Planning Division of the NRA, *Report on the Operation of the National Industrial Recovery Act*, February 1935.

of the underlying philosophy of the National Industrial Recovery Act remaining in the minds of some, and the contrasting disillusionment to be found in the minds of many others concerning the promises which such action holds.

In some quarters it is argued that over a reasonable period of time code authorities would have become schools of experience where, with the assistance of professionally trained analysts from the headquarters staff, industry groups would have come to understand better the harmful effects of restrictive price policies, and would have gradually eliminated wasteful or shortsighted practices and materially improved the price system of industry. By others it is argued that any system of so-called self-government which producers as a group are permitted to develop under government auspices will tend inevitably to protect margins and practices which safeguard the inefficient, thus maintaining the margin of production at a higher cost line than is economically necessary or desirable.

However reasonable the price control provisions of any code might be in a particular set of circumstances, it would seem practically inevitable that the mere fact that an industry group bound itself together to promote a common line of action tends to perpetuate the status quo, to weaken the incentive for any individual to pioneer in technically revolutionary and financially courageous ventures in the direction of lower consumer prices through striking economies in cost and enlargement of output. There would seem to be no question but that this type of organization tends to protect the laggard and to slow down the pace of advance to a rate which is comfortable

for the less energetic or able rather than to stimulate the maximum practical rate of progress.

However, the whole state of public and official thinking on the question of group organization in its relation to economic policy is at present much confused. There are frequent expressions of desire or hope on the part of various industrial groups for a revival of NRA or something having similar capacities for developing protective devices for the small concern. At the same time there is a notable recrudescence of the demand that government instead of permitting or even participating in such coalescence of industrial groups should revive its ancient crusade for the pulverization of industry. Perhaps this confusion of counsel rests upon failure to distinguish two widely divergent matters which are involved in the price situation.

There is an educational and disciplinary rôle which self-government by the trade group supplemented by government agencies can and in increasing measure does perform. Wisely directed, these efforts may redound to the good of the whole system. They relate to the identification and weeding out of abuses through which the unscrupulous concern seeks to gain an advantage by "sweating" labor, "gypping" the consumer on quality, or "chiseling" his competitor through unfair trade practices. We do not presume to give precise definition to these terms; that is a task which must go on indefinitely as new conditions continue to arise. But we do believe that the trade organization with its intimate technical knowledge of actual operating conditions and problems and the government agency with professional staffs trained to understand the broader economic repercussions

of a particular practice constitute the proper focus of examination and action for dealing with it.

But these efforts of industry to regulate itself or of government to regulate it do not dispose of the price problem as we see it in the light of the studies pursued in the preparation of this book. At most these educational and regulatory activities are negative, putting brakes at certain points in the price process, not giving it any active power of contributing to economic progress. Such progress must come from the truly progressive innovating individual within the trade group. He therefore must be left free to follow such a course, subject to the rights of labor and his fellow producers, as will enable him to make this contribution to consumer welfare.

If either the trade agency or the government agency defines as unfair and seeks to outlaw that competition which the most efficient and daring give to the most inefficient or timid—even to the extent of crowding the latter out—then the solidarity of the group will be used for the preservation of mediocrity. Trade organizations so conceived would be combinations in restraint of trade or commerce quite as blighting as any which the law has sought to suppress. Does political action on behalf of the “little fellow” at the margin of inefficiency result in throttling the concern whose efficiency would cause it to grow? If so, our boasted technology has little chance to make its contribution to the welfare of the mass of consumers—the littlest of little fellows who should be the prime concern of government.

To this dilemma between power abused and power destroyed, some people find a simple answer in the belief that it is possible to “restore competition” and that competition thus restored by the mere limitation of size or

elimination of specific abuses will automatically work out a perfect scheme of prices. This view we believe to be erroneous because based on an inadequate perception of the nature of the changed competition which characterizes modern industrial life. The character and significance of this change will be examined in the chapter which follows.

CHAPTER XI

DYNAMIC PRICE-MAKING

The nature of the enquiry undertaken in this book has necessitated the presentation of a wide range of materials selected to illustrate significant aspects of industrial techniques and business practices and the consideration of a wide variety of problems. As a result, there is some danger lest our thought fail to focus on the major issues involved and the larger meaning of the material. We shall therefore present in this chapter a brief concluding interpretation centered on three points: (1) the changing nature of the price-making process which characterizes modern industry; (2) the distinctive rôle now played by the industrial executive in determining, through price making, the degree of success with which private capitalistic industry shall function; (3) the relation of different forms of economic organization, private and governmental, to the kind of price policy which develops.

In order to emphasize the character and significance of the changes which have taken place in the organization of industry, we shall begin by contrasting modern industrial price-making with pricing in the agricultural and handicraft economies which preceded it and which continue to set the pattern for a substantial part of our economic life even today.

THE MARKET AS THE BIRTHPLACE OF PRICES

A French economist once began a discussion of the price-making process with the aphorism, "The market is the birthplace of prices." This metaphor epitomizes very aptly the older theory of prices as found in the traditional economic philosophy of free enterprise under private

capitalism. Its generalizations were based reasonably well, so far as we may judge from this distance, upon the actual commercial and industrial conditions of the world in which it was formulated. But it was a world just emerging from the handicraft epoch into the early stages of machine production. The "state of the arts" was then so much behind what it is today as to constitute an essentially different setting for the operation of the price-making process. This applies not merely to the technical arts by which goods are produced but also to the art of organizing men and property units for the conduct of manufacture and trade.

The older price theory has some applicability today in those types of business which still move in the old pattern—notably agriculture (ex-AAA). But it is quite inadequate to afford an understanding of new kinds of price-making which have come into the picture. It needs to be supplemented by further price analysis based on important developments in the economic process which have come with the growth of modern industrialism.

The ancient and honorable supply-and-demand theory of price was predicated on relatively simple types of economic life, in which farmers or other extractive producers, handicraftsmen, or small manufacturers employed themselves with their capital in the production of goods which were then brought to the market to be sold. *Pricing was accomplished in the process of sale.* If goods were found to be in excess of demand at the current price, that price would of necessity be lowered in order to clear the market. Or, if demand could not be fully satisfied at the current level, prices would be bid up till the limited supply went to those persons whose demand was most intense or whose purchasing power was greatest. This bidding up would presumably bring

out a larger supply, so far as costs permitted, whereas a falling price would warn producers away from a line in which demand was failing or in which output had been expanding unduly.

A price "is born" in such a market whenever sellers are ready to accept for some volume of supply the price which is bid by demanders of a like volume. These momentary equilibria weave themselves into a larger pattern moving toward economic balance or at least away from the most serious maladjustments, through the attraction of effort toward profitable and the repulsion of effort from unprofitable situations. Thus in a world of free competition among many small buyers and many small sellers, an "Unseen Hand" was counted upon to guide economic life constantly along the path of health and progress.

In this theory of primitive price-making, there could be no *policy* of prices which would operate in directing sizable bodies of men and equipment or, much less, a whole sector of the economy. Each man simply took care of himself as best he could. If he could find "a better 'ole," he would presumably try to get into it. But the setting of large general objectives and devising a strategy for their attainment did not devolve upon any "high command." Exponents of the traditional doctrine have, with the passage of time, sought to make it include the larger units of employment, equipment, and direction which grew up with the expansion of the factory system and the emergence of great corporations and overhead financial agencies. But this has been too much a mere stretching or trying to stretch old theories to embrace new facts, however disparate. Many of the most significant new facts have been left out because they proved unmanageable or because they have not been perceived.

With the continuing evolution of industrialism, the range of technological possibilities has been enlarged, new schemes of organization have been devised, and the industrial executive has emerged as a new and potent figure in the scene. He is different not merely quantitatively but also qualitatively from any figure to be found in pre-industrial life. The executive of a great corporation is no mere multiplication in size and power of the farmer with his small group of laborers or tenants, or the guild craftsman with his servants and apprentices. He is a functionary whose distinctive qualities have in the main emerged within the last half-century. In his hands rest the creative powers which will determine in large measure the tempo of our economic progress.

Since the whole industrial system is organized on the basis of price, the office of the industrial executive has now become the center of significant action. Upon the nature of his price philosophy and the manner in which it operates in determining prices the attention of those who are concerned as to our future economic progress should chiefly focus. While the grain exchange and other parts of the commodity market are still the birthplace of prices for many agricultural products, it is in the office of the industrial executive that we find the birthplace of prices for an increasing number of industrial products. We need to give closer scrutiny, therefore, to the essential differences which characterize this new industrial price-making process and to seek better understanding of the principles which govern its functioning.

THE INDUSTRIAL OFFICE AS THE BIRTHPLACE OF PRICES

An essential feature of industrial price-making lies in the fact that, instead of passively accepting the market's pricing of a supply subject to no central control, it sets

a price objective and directs a controlled productive mechanism toward attainment of that price level. With this change the price-making executive takes over from the "Unseen Hand" as guide and regulator of the economic process in a considerable part of our business world. He takes upon himself the responsibility for the standard of living for an ever larger proportion of our people. Much as he generally hates the phrase, he becomes in fact the economic planner of our society rather than merely the adapter of his personal affairs as best he can to a largely automatic price mechanism.

As the modern industrial system has developed, larger and larger numbers of persons have been absorbed into complicated systems of group production through which they could gain the added efficiency of massive accumulations of power equipment and the specialized skill of an overhead administrative agency. To realize these gains, however, it is required that the several parts of the system shall be fully used. This is the task which is thrown upon that group in our modern system who assume the responsibility for administrative direction. Their price policy must be geared to the maintenance of capacity operation if we are to get out of this modern industrial system all the benefit which it has to offer.

Capitalistic industrialism has increased and shifted the speculative element in the economic process. It undertakes heavy advance commitments in plant, materials, and labor on the gamble that the enlarged product can be disposed of at a remunerative price. Not only does it take risks as to the volume of traditional goods that it can sell but increasingly it has been developing new markets for novel types of goods. This introduces a dynamic element. Prices made in the industrial office aim

to open new markets, exploit new products and processes, attract and reward free business enterprise.

But the shift to capitalistic industrialism introduces a static element too. Capitalism is in the nature of the case deeply concerned about conserving and adding to that which gives it its power—the physical property with which it works or the money values which are its more abstract form. Capital is sustained and grows from profits; the “profit motive” is therefore the essence of capitalism. But if the amassing of capital becomes an end in itself or if the jeopardizing of capital comes to be regarded in an increasing number of cases as a hazard too great to be taken, the social usefulness, the long-run workability of capitalism is reduced.

Such an outcome, however, is not inherent in the system, but grows out of a lack of understanding on the part of those who attempt to run it. While it is evident that the profit motive is the necessary mainspring of capitalistic industrialism, the profit technique has been formulated and followed in two quite different ways by different groups at different times or in different situations. Let us turn our attention first to a technique of pricing for profit which is direct and obvious but too mechanistic in character to develop the full possibilities of our economy as a living process.

THE MECHANISTIC APPROACH TO PRICES

To the person of literal mind and naive intellectual processes, the procedure to be followed in arriving at a schedule of prices seems simple and obvious. It involves only straight counting and addition. It is essentially the practice followed by the handicraftsman of the older day who figured the cost of his materials and to this added

his labor charge. The process is more complicated in a modern factory with a wide range of products having a complex array of joint costs. But a great deal of industrial price-making simply looks at a commodity in the market as a cumulation of cost items for materials, labor, machine service, and various overhead costs. When these have been added together and a "proper" loading for profit added, you have your price Q.E.D. The cost accountant produces the records of the past to show that those are the costs the business has incurred and which it must recover or quit.

If goods do not sell at this price, two courses are open. One is to intensify promotional effort. This in essence means stimulating demand, a procedure which itself adds further to costs and works only within the limits set by consumers' purchasing power. The other is to curtail supply. Since labor and raw material account for most of the cost in the majority of finished products, a large part of the expense incurred in carrying on the given industry can be avoided through the power to restrict volume which lies in the hands of the typical modern corporate producer. By holding his frontier of operations back to the point at which unit profits can be assured because no business is accepted which will not pay its own way, corporate management has a considerable power to protect itself.

This sort of price-making is therefore essentially conservationist in character, setting the protection of existing capital as its major goal. It is not concerned primarily with the satisfaction of consumers, who must to some extent forego enjoyment of commodities which would elevate their standard of living and permit them to share more largely in the potential benefits of a land of rich resources and abundant capital. This sort of price-making

is unconcerned likewise with the position of the wage earner whose employment shrinks with the curtailment of production in the interest of recouping current costs and safeguarding unit margins. Since workers make up the mass of consumers, this class is doubly disadvantaged from the protective approach to price-making inasmuch as this procedure leads to a combination of high costs and restricted employment.

It is, however, a view which is tenaciously held and seriously advanced from certain quarters. It is, as pointed out in Chapters IV and X, the line of approach of most cost accounting. It is not strange that it has recently been elaborated into a whole "science of industrial management" by a firm of consulting engineers. The simplicity of its mechanistic logic has convinced them that it is the inescapable answer to universal prosperity based on a pre-determined profit on every unit of product sold.¹ But it fails utterly to recognize that the economic process is not mechanical in its character, with a simple sequence from cost cause to price effect. It is blind to the fact that economic life is an organic process of interrelated growth in which the values of cost items are the results of the price of the finished product quite as much as they are its cause. As has been pointed out at numerous places in the book, the unit cost is vitally affected by the number of units which the administered price permits of being absorbed in the market. Plant cost depends on the percentage of capacity utilized, and the possibility of improving techniques depends largely upon volume of

¹ For exposition of this view, see W. L. Churchill, *Pricing for Profit*. He argues for a price formula which allocates overhead on the basis of "normal" operation at 66.6 per cent of capacity. He declares that profit should be twice the conversion cost but cites with approval a manufacturer who followed the rule of making selling price five times the manufacturing cost.

sales. To accept the relatively high unit costs that go with small volume of business and to insist on a large profit margin on a slow rate of turnover is to dry up the wells of productive activity.

When the birthplace of prices was transferred from the market place to the industrial office, it is not strange that the industrialist should have aspired to use his control over capital as a control over price and, by the simple cost-plus formula, claim a definitive and permanent answer to his administrative problem. If the price which he computed as necessary failed to maintain full volume of operation, the employer could protect himself to an extent by shifting the burden to the worker in the form of unemployment. But it is becoming increasingly clear that such an answer to the price problem is hardly less satisfactory to the capitalist than to the laborer.

He finds the cost of unemployment coming back eventually though indirectly in new burdens for relief, protection against crime and sickness, and the loss of labor efficiency and morale. It comes back directly also not merely in suspension of earnings on capital in the abstract sense but in the form of physical deterioration and technological obsolescence of plant during its idle periods. Finally, all that one concern saves in payroll is taken out of the buying market on which other concerns depend for their sales. In a word, nothing less than continuous capacity operation can fully answer capital's problem—any more than it can answer labor's problem.²

THE DYNAMIC APPROACH TO PRICES

Fortunately, there is within business itself such a degree of resourcefulness, imagination, and creative genius

² Here and elsewhere in the chapter "capacity operation" of course means the sort of result practically attainable under existing conditions of technology and general organization of industry as discussed at considerable length in *America's Capacity to Produce* (Edwin G. Nourse and Associates).

that the administration of the modern industrial system has by no means been limited to the static and protective type of price-making which was discussed in the preceding section. A substantial part of the body of this book has been devoted to identifying and illustrating the dynamic aspects of modern industrial price-making. By pioneering such methods have the leaders of American business served as pace-makers in those brilliant periods of progress which have characterized much of our national history since the Civil War. To this type of leadership are due also such powers of resistance as have been shown at times when other so-called leaders have drawn themselves into a shell of self-protection. By the more universal dissemination of these methods may we hope not alone for recovery from present stagnation but for the maintenance of a more orderly and stabilized prosperity over the years to come.

The distinctive feature of this constructive attack on the problem of pricing is that instead of starting from the position in which the administrator and the technique happen to be and moving forward by cumulative cost computation to set a price, it starts from the consumer's want and purchasing power and courageously accepts the task of finding a means of satisfying these wants within the limitations of this purchasing power. In essence it says: "These are the orders which the consuming department of our society places with the producing department. It is our task as executives to keep the plants going so that these orders may be filled. Shutting down plant and discharging men because we are dissatisfied with prices will not accomplish this result. Hence we must devise a way which will so economize in the process that the potential order can be filled. So long as people have unsatisfied wants and we have available productive resources, a way shall be found of bringing them together.

That is what business is: not policing an idle plant."

The evidence we have submitted should make it apparent that the kind of price-making process here set forth is no figment of the economist's imagination. It is something indigenous to the process itself. We have simply observed and recorded what the business man, in his day-to-day attempts to do business has discovered, the new ways he has devised for fitting modern techniques to the supplying of human wants. The business man in general, absorbed in the practice of business, has little time or desire to organize its basic theory. That task is left to the economist. It is an important task, for which he needs first the penetrating eye to see what is going on beneath the surface of business affairs, then the organizing skill to generalize the multifarious facts into broad principles which explain the intrinsic qualities of this behavior. Such theorizing—and the word needs no apology—is not for the economist's own delectation or the edification of his professional brethren. Rather it is to give those who have innovated these new and better ways a clearer understanding of how they work and why they work, in order that they may be more widely disseminated and further perfected. It may also serve to reveal some shortcomings in current practice, errors to be avoided, abuses to be remedied.

As pointed out at various places, the militant sort of price philosophy and action comes to expression most naturally and effectively at the frontier where industry meets the ultimate consumer of finished goods rather than at the mine mouth or the plant which produces raw materials, semi-finished products, or remote "producers' goods." But if progress is to be steadily made at the consumer frontier, the industries which serve as supply lines to the rear must at least be willing to fall in step. Thus,

for example, the steel industry could not go out and determine the course of growth for the automobile industry. But if automobile makers build up a great market for cars, this creates a demand for sheet steel which stimulates the development of continuous strip mills and lower unit costs linked with larger volume. The automobile business is the natural pace-maker, but maximum results will not be obtained unless the steel maker does his utmost to follow the lead.

Business executives, as pointed out in Chapters VI and VII, are circumstanced by a variety of market conditions and external controls and influences which establish the metes and bounds within which they must work.⁸ But this by no means robs them of their power of independent action nor frees them from the responsibility that goes with it. The situation is essentially the same as that of free will and determinism in the field of personal conduct. We know that every individual is conditioned by factors of ancestry, upbringing, and associations. But most of us are not willing to admit that all these determining factors deprive him of the power to feel or exercise a will of his own or to bend circumstances to the achieving of his best dreams and ambitions. And so in this book, while seeking to keep always in the background a practical realization of the environment in which the business executive works, we have given the foreground to the "enterpriser" using his freedom to exercise his will in making and carrying out a price plan which advances economic progress. We have cited the acts of business

⁸ We are not unmindful of the fact that the complicating factors with which the business man works today include wage controversies and adjustments, tax changes, and a variety of special depression influences. As explained in the introduction, however, we are not in this volume concerned with short-run influences, but with the long-term trend as related specifically to the one issue, technological advance and its repercussions on prices.

men themselves to show that they are not caught in a mesh of economic determinism, are not reduced to a static cost-plus policy.

That many of them are conscious of the meaning of their acts, that the leaders are striving to disseminate these types of price-making more widely, may be made evident by a few quotations from leaders of this school of thought. Mr. Ford's views—reinforced by practice—are well known. They are practically paralleled by those of other motor company executives. Mr. Alfred P. Sloan, Jr. says:

. . . stabilization means a higher price level. Yet such a higher price level is usually high enough to protect all but a few producers. Stabilization discounts individual aggressiveness and ability, and penalizes the new and better to protect the vested rights of the past . . . if that is to be our approach, it is most unfortunate for those who want more—they certainly will have to accept not only less but always less than otherwise would be possible. . . . One thing is perfectly evident today. Those who have followed the practice of lowering the cost of goods and services are the ones who show the smallest amount of unemployment and have therefore made the most progress toward recovery. On the other hand, those who have followed, to some extent, the principle of stabilization have progressed the least and are, today, still the most depressed. . . . As selling prices mount, consumption is reduced. As consumption is reduced, unemployment is increased. It is a vicious circle. . . . Business, big or small, survives only when it is based upon efficiency, when it delivers to the consuming public a greater dollar value than is obtained in any other way.⁴

President Lammot Du Pont, in the report of his company for 1937, says:

In conformity with its general policy, the company endeavors to increase consumption of its patented and other new products

⁴ In a chapter contributed to J. George Frederick, *For Top-Executives Only*, pp. 366, 367, 368, 369.

by aiming at a low profit per unit on a large volume of sales rather than a high margin on a small volume. A review of twelve of the company's more important developmental lines over the past ten years affords an interesting insight into the actual working out of this price policy. . . . These twelve lines accounted for about 40 per cent of the company's total 1937 sales volume; and their production and sale are now directly giving employment to approximately 18,000 workers, as compared with about 10,700 employees in 1928 in the same groups of products. During the same period the company's investment in facilities for the manufacture of these products has increased from approximately \$65,000,000 to approximately \$174,000,000. The composite, or weighted average, reduction in sales prices for these twelve groups of products from 1928, or the year of introduction if later than 1928, up to and including 1937, has been approximately 40 per cent.

And similarly, President E. M. Queeny of Monsanto Chemical Company says:

Management is trustee for the investor. It is responsible for the economic lot of labor, for upon the ability of management to maintain profitable operations depends the continuance of jobs at fair wages. Consumers look to management for good products at equitable prices. . . . Everything [we] make is directly competitive with some other manufactured or natural product. Indirectly, we are in competition with all producers, farmers and industry, and all services such as transportation and amusement. The cheaper we can produce and sell each of our products, the greater value each will represent, the more will be consumed and the greater will be [our] total employment and our usefulness in increasing the standard of living of fellow Americans.

Possibly more significant even than the utterances of individual leaders is the fact that business men in their largest and most influential organizations are pursuing similar lines of thought. The National Association of Manufacturers, besides its own staff and committee personnel, has drawn economists from a wide variety of connections to serve as an advisory group for certain of its

committees in considering industrial practices, recovery measures, and "industry's platform." Naturally such reports, being the common denominator of many minds which must agree in the process of drafting and of still more minds which must find the statement sufficiently acceptable to adopt it, are more cautious than those of individual leaders. But we may note the following from "industry's platform for 1938":

The key to improved American living standards is an increasing flow of products to consumers. More desires—more demand—more goods—more employment. Industry benefits both individuals and society by the development of new and better products through research, and by stimulating the desire for them through advertising and other sound means of sales promotion. Improved distribution means making more goods available at as low a price as the particular service demanded by purchasers permits.

Likewise, the chairman of the Committee on Industrial Practices in submitting his report stressed the "rising appreciation of the importance of social stewardship in industry."

How widely such views are accepted or how fully they will be put into practice remains to be seen. But the mere fact that the question is being discussed in these terms and such sentiments being linked with these names is, we believe, significant.

GENERALSHIP MUST BE CENTRALIZED

What we have been saying about the nature of constructive price-making and the rôle of the industrial leader carries us over into the third point raised at the beginning of this chapter. We must consider now the character of the industrial organization within which the executive function is exercised.

One of the most important problems which has emerged in the evolution of modern industrialism concerns the size of business units and the organizational structure which is necessary if the potential efficiency of the system is to be fully realized. We have in Chapter IV analyzed several of the outstanding issues in the problem—in terms of equipment, of personnel, and of market exploitation. We have seen that modern industry calls for relatively large units at certain strategic points but also permits or indeed requires the fitting of many smaller units in among these larger concerns. But the efficiency even of the smaller concerns depends on the existence of large ones and the interrelationships amongst all parts of the systems.

The larger units are demanded by economic as well as technological considerations. In fact economic considerations rather typically call for still larger units than do mere technological needs. A plant might be quite capable of maximum operative efficiency and yet a business concern of the size called for by this single plant be utterly incapable of devising and carrying out a production and price strategy such as would make a contribution to economic progress. Daring, broad-scale innovations in the way of technique and price experimentation involve large forward commitments which often can not be made by small business concerns, no one of which can control a volume of supply large enough to have a significant influence in the market. Thus the persistent dissolution of large corporations would bring us to the point where we had not the power to make the industrial advances which would progressively lower prices. "Pure competition" is not the path to economic progress in an industrial age.

If an executive is to make a real stride forward toward enlarged efficiency with a new technique whose success will depend on plant outlays which will produce minimum costs through mass production and follow a price policy which will secure mass buying at a stimulative price, he must not only conduct experiments in the chemical laboratory and provide for invention and building of equipment not known before. He must also conduct careful studies of the nature and elasticity of demand, prepare the field for his product, and systematically promote its introduction to and exploitation among consumers. The large company which develops a market is performing these functions vicariously for small concerns who supply him with materials or parts for his assembly. By making a market for them he reduces their costs, and his size is a protection rather than a menace to them.

By some, it is assumed that the centralization of generalship which is necessary to the execution of broad policies involves more harm than good to our economic system because it means the decline of that force of regulation on which we have always pinned our faith, namely competition. It is our contention that small-scale or atomistic competition has now been forced from so much of our system for technical reasons that we can not rely upon it as a regulating force in modern industry whatever its usefulness may have been under more simple conditions. Nor could we return to it without reverting to primitive types of production. On the other hand, we see new possibilities of improving the price-making process emerging in the hands of our so-called captains of industry. In this transition, however, we do not see the death of competition but its metamorphosis. What seems to us needed is not the destruction of this new power but

a truer understanding of the changed basis of competition, to the end that we may benefit most fully from it.

In pointing to the great gains which have already come and the still larger benefits to be anticipated from courageous and constructive price-making according to the new industrial pattern, we have not been unmindful of the misunderstanding of these new powers and their abuse by many big business concerns. We have indulged in Chapters VIII and IX in more historical examination of the growth of "big business" than is compatible with the general scheme of treatment adopted for the book as a whole. Our purpose in so doing was to note the progress in thinking which business men have themselves developed out of the relatively brief experience that our economy has had in the field of big business. We recognize that in the intoxication of their early power, many large-scale industries sought to suppress competition, and the temptation to abuse their power is still present. But longer experience with these newer industrial situations teaches the serious danger of such policies. It shows that to snatch for the immoderate enjoyment of the moment's fruit means fatal disregard of the means by which future harvests may be assured and enlarged. On the other hand, further experience piles up examples of the long-run gains which flow from consistent policies of passing on the benefits of technological advance and turns the interest and activities of business men to more long-range types of strategy.

Furthermore, there are several potent limitations which circumscribe the ability of the large corporation to abuse its power. The first is the constant danger that, if price is not held in reasonable relation to costs as they decline, one's rival will adopt a more aggressive pricing

policy and thereby take the market to himself. Such direct competition is a familiar phenomenon.⁵

The second limiting factor is indirect in its nature and grows out of the very force which gives the new competition its distinctive character, namely the advance of scientific techniques. By it there are now provided so many alternative ways of satisfying human wants that the power to say that the consumer shall pay your price or leave his want unsatisfied is becoming constantly more restricted. The resourcefulness of modern technology provides substitutes which enlarge the consumer's ability to defend himself by switching to another commodity which may be quite unrelated in origin or even character to the product for which the high price is demanded. It may minister to the same want in a different way or it may cause the consumer to direct his purchasing power to the satisfaction of a somewhat different want. Hence the producer has it constantly borne in upon his mind that he must woo his market by giving constantly more for the money rather than trying to coerce it to pay whatever he may want to ask.

Third, of course, the consumer may invoke the protective powers of government. While it has been no part of the task of this book to discuss governmental control, one observation may be made as to the influence of this potentiality on the policy of the price-maker. It seems axiomatic that if price policy voluntarily follows such lines as to give consumers a comfortably rising standard

⁵ While division of the business among strong companies as a means of supporting a high level of prices can be made to sound safe and effective on the pages of a book, its actual practice is beset by grave dangers—both from within and from without. The notorious instability of industrial "pools" testified to the fragility of such bonds even under the older technological conditions. Their further weakening under modern industrial conditions is developed in the next paragraph.

of living, there is likely to be relatively little pressure for regulatory measures. On the other hand, if the feeling becomes widespread among consumers that they are not sharing as liberally as might be in the advance of knowledge and techniques, they are likely to be vigorous and perhaps unreasonable in their demands for regulatory measures.

We do not intend to dismiss the issue of bigness as having been brought to a final solution. But neither are we justified in assuming that as soon as an organization attains enough power so that it can have a positive price policy, it must inevitably take the shortest-run acquisitive view and seek to charge all the day's traffic will bear, regardless of the effect this may have on the continuous flow and possible expansion of future trade. Such a view implies that the planning of the industrial executive is not designed even reasonably intelligently to contribute to the sound permanent expansion of his industry or to the upbuilding of business activity in general, from which he may in due time derive a larger volume of business for his own concern.

It is easy to see imperfections which still remain in industrial price making. It is important that we study carefully the nature of these limitations and seek to remove them. But to point to the mere size of modern corporations, functioning as they do today, as an evidence "that the era of competitive capitalism has been brought to a close" is a conclusion not supported by the evidence. In so far as large-scale organization puts the natural pace-maker in a position of command over a large segment of the economy, it means a struggle to advance the lines of economic effort truly heroic in proportions. The competition among pigmies, which some are eager to try to

restore, is puny by comparison. Competition is quite as keen and much more productive of results when we find industrial giants marshaling their mighty resources to perfect new techniques and new schemes of organization through whose use more and better goods may be put within the reach of the masses.

The battle between the three giants in the automobile field sets the high mark of economically useful competition that our system has thus far presented. But the competitive struggle amongst the leading chemical companies, the great mail order houses, the leading food chains, the principal electrical concerns, and many others is of the same general order. If we could get home-building giants competing with each other, might we not get a similar lowering of prices of basic materials by supplying an assured quantity market which would make possible the long-delayed liaison between low-cost fabrication and cheap materials in that field? Local builders have shown themselves incapable of developing either operative efficiency on the modern industrial plane or the pressure toward mass supply and rock bottom prices for materials.

THE CHALLENGE OF FREE ENTERPRISE

In what has just been said about the big business concern as the most effective agency for originating and carrying out a consistent program of progress through price reduction, it must not be supposed that we conceive of such an organization as making prices or itself solving the pricing problem. The "administered prices" of the big corporation are expressions of the thinking of particular men who occupy executive positions. They reflect the way in which those individuals suppose that the economic process works. A big corporation is a potent in-

strument in the hands of a stupid man to carry into effect a price policy which may stunt its growth or lead to its actual death. It is, in the hands of one who understands the laws of economic growth, an equally powerful instrument for the carrying out of a price program which will stimulate and develop the market, lead to capacity operations, and thereby contribute to that general prosperity on which the given business itself will feed in the future.

What does seem evident is that there must be opportunity for effective leadership brought to focus at the proper points to give it maximum effectiveness. In this connection, we have considered not merely the policy rôle of the giant corporation but also that of the trade association in which many corporations and even small companies are joined, and the way in which policy may be exercised through governmental agencies acting as regulatory bodies or as participants in some operating organization made up of private concerns. While experience is not as yet sufficient to demonstrate fully what powers these democratic schemes of group organization might in the long run have in the way of industrial leadership, it does point clearly to a serious dilemma. Either they tend to keep their activities on the level of the debating society with no actual control over members, or else they tend toward the path of regimentation which leads to authoritarian control. So far as present experience goes, these organizations have not yet proved their ability to avoid such compromise as in Chapter X was called the "triumph of mediocrity." Even though unable to bring up the laggards, these group solidarities show a disquieting power to exert a retarding influence on those who could and would be pace-makers.

We believe that experience is quite sufficient to point

to the continued need of giving to the innovator, the enterpriser, the maximum opportunity for implementing his constructive proposals. The greatest promise of realizing the economic progress of which our people are capable is through the free action of far-seeing executives. As we have observed in Chapter VII (page 145), the enterpriser in the true sense is the inventor, the creator, the dynamic center of all business activity. This is equally true, whether what he creates is a new mechanical process, a new scheme of business organization and management, or a new price policy. But whatever it be, he cannot reach his real goal or make his real contribution to his fellow citizens if he is tied down to the pace of the stragglers, constrained to a size of enterprise inadequate to the character of the functions to be performed, or has his hands tied by external financial controls. If we expect satisfactory results from the run of business executives, it means, of course, that they must retain their character as true enterprisers and not look upon their business as a device for stock jobbing, or as a means of making a short-run killing on which to retire or a short-run reputation on which to market their services elsewhere. Neither may they seek the comfort of non-competitive understandings with other companies.

It is a common saying that America was founded on the basis of freedom of economic enterprise—along with religious toleration and political democracy—and that the preservation of this free enterprise is “the American way.” Belief in the potential efficiency of such a scheme of organization rests, we believe, on sound economic grounds. But we must be sure that we understand the nature of free enterprise and the rôle that it plays in a successful economic system. Free enterprise as it was

practiced in the simple conditions of colonial and early national life meant that the working population was given easy access to natural resources and that it threw in its labor and such capital as it had without stint for the economic upbuilding of the nation.

With the growth of a more complex industrial system, there is less of individual enterprise and more concentration in the hands of corporate officials. If they are to be safe custodians of our national prosperity under a system which gives them large freedom in developing these great enterprises, they must accept the responsibility of so conducting the system that the great mass of those no longer in a position of self-employment shall still have access to jobs through which they may meet their needs up to the maximum made possible by our rich resources and advancing techniques. A sound pricing system is, as we have said all along, one which develops capacity operation, and this implies employment of the nation's full labor force.

Industrial employers are prone to call attention to the narrow vision, not to say stupidity, manifested in the wage policies of labor union officials in demanding rates of pay so high that they curtail the number of units of the single merchantable commodity which the laborer has to sell—his labor. But how much difference is there, after all, in the policies manifested by these same employers when they seek to enforce a schedule of prices so high as to result in severely restricting their ability to utilize fully the capital goods of which they are trustees? For example, may not an industry that is notorious for leading alternately the life of prince and of pauper be suspected of trying to implement a price schedule unduly high during its princely period? Is not the insistence on

stabilized prices a possible cause of unstabilized business?

Even the fact that industry nominally escapes the burden of supporting labor during its periods of unemployment does not mean that it goes scot-free. For the tax collector presents his bill for relief expense, added cost of police protection, and some part of the added health bill. Besides this, the employer loses in the loss of training of each new class of recruits and in the impaired morale of the whole labor body. We can not say that we have sound price policies until we present the proof in terms of capacity operation.

Let no one suppose that what we are here expressing is a mere pious homily on some altruistic but impracticable scheme of business management. We are not proposing that business men play the rôle of Santa Claus and turn over their wealth to the public or that they work for only nominal pay. It is an intensely practical question we are asking, namely: What type of price adjustments are needed to cause our economic system to function so perfectly that out of maximum product stockholders of corporations as well as all other participants may derive the largest return which can be continuously maintained by the productive process? The answer to that question involves the harmonizing of the new techniques of operation, the new patterns of organization, and the new philosophy of price.

The only answer to this question that we are proposing is that given by those business men who have accepted the challenge of finding ways of organizing production so as to supply wants within the purchasing power of the workers who produce the goods. When the same understanding of the economic process has been fully disseminated and acted upon, business as a whole will

demonstrate that it can furnish opportunity for the whole laboring population to apply their effort with the best of equipment to the satisfying of their wants. It is the distinctive achievement of capitalism that it has made available more efficient techniques and equipment to the labor force. It has been its chief shortcoming that it has not fully succeeded in finding ways of administering the pecuniary part of the system so that labor shall be able at all times to apply itself as fully as it wishes to the satisfaction of its wants. But if this more courageous and imaginative type of price making can be generalized, this limitation upon capitalistic production will disappear. We shall have restored the self-subsisting quality of the simpler economy while still retaining the enormously added efficiencies made available through technological and organizational development.

If the American business man demands the right of freedom of economic enterprise, society in granting it to him may properly ask that he use that freedom aggressively in the public interest. This, to our way of thinking, is the challenge which the industrial system makes to the industrial executive. If he cannot meet it, the system of free enterprise under private capitalism is doomed to a condition of invalidism, low vitality, and unproductiveness which is utterly incompatible with the natural resources, productive equipment, and man power which the nation has at its disposal.

APPENDIXES

APPENDIX A

SOME SHORTCOMINGS OF THE PRICE DATA

Price *quotations*, even those reported by the most reliable agencies, by no means tell a full and accurate story as to prices *actually paid* by buyers. Any contract for the sale of goods (we are speaking, of course, of wholesale transactions, and especially of those in which the seller is an industrial producer) is commonly the result of a deal. If conditions have created a "buyers' market," the seller's official price may amount to little more than a starting point for negotiation.¹

Even where every sale is handled in strict compliance with some published schedule, as was prescribed by many NRA codes, the price quotation that is selected and made the basis of some generally accepted price series ordinarily represents only one, or at best a few, of a considerable group of commodities, which may be of quite unequal and ever-changing importance. Any quoted price, moreover, is necessarily paid by a specified class of customers, although there may be many classes of customers and a given customer or transaction may sometimes be classified in one way and sometimes in another. Beyond this, the complexity of terms of sale—which commonly involve discounts, allowances, and services on the one hand, and extra charges on the other—may create a situation which is so intricate and shifting as to make it hard to tell what prices are being charged to a single customer, and even more difficult to determine how

¹ A good illustration of a price series which does not reflect the actual market situation is afforded by sulphuric acid. Quoted sulphuric acid prices are for "spot" delivery, and stand at an arbitrary figure which is seldom changed. But most sulphuric acid is sold on contract. In the negotiation of these contracts there is the keenest competition, and the prices arrived at are sensitive to every market factor.

representative a given price series may be for the trade as a whole.

How confused a price structure may become is well illustrated by *A Study of Open Price Filing in the Electrical Manufacturing Industry*,² probably the most comprehensive analysis ever undertaken of the prices which have actually been in effect in an industry. The seventeen branches of electrical manufacturing, including such unlike activities as the making of flash-light batteries, welding apparatus, radio tubes, fuse-plugs, building wire, and potato peeling machinery, were found to exemplify not one but many price patterns, each of which was in turn compounded not of one, but of many elements.

We can not here review the prices and changes in prices, the terms and changes in terms, and the classifications and changes in classifications which marked the course of electrical prices during the few months (under NRA) when a full record of their course was kept. However, the following quotations from the concluding chapter of the report will give a fair idea of some of the difficulties involved in analyzing the data:

There is hardly a price-call in the electrical industry [notification to the manufacturers to list prices] which related to a simple product without variation in size, grade, design or technical specifications. . . . In many instances, although the number of basic products is small, the presence of a small number of universal variables plus a great many variations in size and grade, result in so many possible combinations and permutations as to involve thousands of different prices, applying to particular specifications, as is the case in the rubber-covered building wire group. In still other cases, the actual products themselves are numerous, as in domestic heating appliances. To add further confusion to this picture the products do not necessarily maintain a quality continuity. There are the cases where the products

² By Willard L. Thorp and A. H. Caesar with the assistance of F. W. Powell (National Recovery Administration, Division of Review, *Work Materials No. 78*).

are continually changed in design or structure, or where old products are dropped and new products appear as in the domestic heating appliance group. In the battery group, the problem of defining the product is further complicated by the provision for different prices according to the nature of the label—the standard brand label carrying higher prices than special labels although the actual merchandise involved may be identical. In several groups, the problem of packaging appears. The product is usually not purchased in bulk so prices must take into account the form in which it is purchased. In the wire groups, this raises problems of spools, reels and factory lengths; in products such as sockets, of standard packages, cartons and broken cartons. One might expect that price changes in a line such as building wire or sockets would move uniformly, and that consequently one or two typical items would provide a base from which all other prices would maintain regular differentials. Unfortunately, such is by no means the case. To be sure, there are occasional broadside price changes affecting the entire list, but in addition there are continual sharp-shooting revisions in the list price of one or another single item.

While the mass of detail and even the conclusions with reference to freight, credit, customer classifications, quantity discounts, and allowances are too complicated to be included here, the following observation is so challenging, if not positively devastating (in its bearing on the validity of price series), as to merit quotation:

The result of this complicated marketing situation is the frequent use of a list price which serves no purpose except as a basis from which various differential discounts may be computed. Rather than vary the list price, price changes may be made by changing some or all of the discount rates. . . . In most of the groups studied, these customer discounts are the heart of the price structure. They create wide differences in price to different customers. The most significant changes in price occur by means of their revision, reflecting the efforts to attract those operating in one or another channel of distribution or use.

It might be thought that a basic commodity like steel

would have a definite, universally known price; and, in fact, the published quotations for steel have been widely regarded not only as an index of conditions and policies in the steel industry, but, to some degree, of industrial trends generally. The more critical observation of recent years has made note of the fact, however, that, overlying the base quotations for steel, there are charges for extras, and charges or allowances for ancillary services, credit terms, and transportation costs, which cause the base quotation to be only a part of the total price picture, even where the quoted price is adhered to as a base. How universal and important is the charge for extras (which never enter into the price series) will be evident when it is pointed out that very little, if any, of the steel sold is steel of the formless, undifferentiated type which the statistical series posit. Thus Stratton, in *The Economics of the Iron and Steel Industry*, points out that even in the manufacture of tonnage products there are many different grades and qualities, it being necessary to vary either the chemical composition or type of heat treatment or finishing processes to meet special requirements. One large steel producer, he states, has testified to making more than 600 different grades of steel in one year. In addition to metallurgical differentiations, there is also a wide range of shapes and sizes which must be produced to meet varied customer requirements.³

That dependence on mere market quotations may, in fact, give a seriously erroneous impression of what has happened to prices actually paid for steel is shown by an analysis made a few years ago by one of the independent manufacturers of agricultural machinery. In checking back their records they found that the trend since 1913 in the actual cost to them of steel differed by 50 per cent

³ C. R. Daugherty, M. G. de Chazeau, and S. S. Stratton, *The Economics of the Iron and Steel Industry* (Bureau of Business Research, University of Pittsburgh), Vol. I, p. 13.

from the trend as indicated by the government-published price series.⁴

It is to be hoped that price series are on the whole more representative of actual prices than these illustrations would suggest. However, since the deviation of actual prices from published prices is in some instances so material, it is obvious that one must be very cautious about drawing fine conclusions from available price indexes. These shortcomings are in addition to the difficulties raised by changes in quality such as are discussed in Chapter III.

⁴ A broader check, though over only a short time, on the accuracy of price series is afforded by a tabulation by PWA of the prices actually paid by various cities for ten important building materials. Here it has been found that the actual prices have been running about 10 per cent under the quoted prices. But it is not believed that there tends to be a fixed percentage. During periods of active demand, actual prices come closer to quoted prices; whereas during depression, they swing farther away from this base.

That the inadequacies of price data extend far into the past is suggested by a check-up made by America's largest typewriter manufacturer about 1922. Between 1900 and 1922 there had been no change in the list price of this company's typewriters. But the prices actually received were, upon examination, found to have gradually advanced within this period (the war years being disregarded) by 15 or 20 per cent. Consultation between this concern and other typewriter companies indicated that much this same situation had prevailed elsewhere in typewriter selling during these years.

APPENDIX B

STATISTICAL TABLES

1. INDEXES OF WEEKLY WAGES AND OF WHOLESALE PRICES
OF MANUFACTURED PRODUCTS, 1870-1937
(1936=100)

Year	Weekly Wages ^a	Prices of Manufactured Products ^b	Wage Index Divided by Price Index	Year	Weekly Wages ^a	Prices of Manufactured Products ^b	Wage Index Divided by Price Index
1870...	42.8	116.8	36.6	1890...	39.7	73.3	54.2
1871...	42.8	112.2	38.1	1891...	40.0	72.4	55.2
1872...	43.1	116.2	37.1	1892...	40.4	69.0	58.6
1873...	43.3	118.4	36.6	1893...	38.0	70.4	54.0
1874...	42.8	111.3	38.5	1894...	34.9	61.2	57.0
1875...	41.4	104.6	39.6	1895...	37.6	61.3	61.3
1876...	39.4	96.3	40.9	1896...	36.7	59.3	61.9
1877...	37.5	89.5	41.9	1897...	36.9	60.2	61.3
1878...	35.7	81.8	43.6	1898...	37.3	62.3	59.9
1879...	35.0	79.4	44.1	1899...	38.6	66.5	58.0
1880...	35.7	88.7	40.2	1900...	39.4	70.2	56.1
1881...	36.7	86.6	42.4	1901...	41.3	69.0	59.9
1882...	37.9	88.4	42.9	1902...	42.8	73.5	58.2
1883...	38.7	85.7	45.2	1903...	44.0	72.7	60.5
1884...	39.0	80.1	48.7	1904...	43.2	72.9	59.3
1885...	38.4	75.6	50.8	1905...	44.7	74.9	59.7
1886...	38.1	74.9	50.9	1906...	45.8	74.0	61.9
1887...	38.9	74.3	52.4	1907...	47.2	79.8	59.1
1888...	39.0	74.6	52.3	1908...	43.0	78.5	54.8
1889...	39.3	74.0	53.1	1909...	46.9	82.8	56.6

^a Index 1870 to 1889 based on estimates of Ralph G. Hurlin, Department of Statistics, Russel Sage Foundation (for earnings of artisans and laborers); 1890 to 1918, on Paul Douglas, *Real Wages in the United States*, p. 246; 1919 to 1937, on The Brookings Institution, *The Recovery Problem in the United States*, p. 632, brought up to date on basis of revised Bureau of Labor Statistics index and of 1935 Census of Manufactures.

^b From 1870 to 1889, based on a simple average of 125 manufactured articles as published in 52 Cong. 2 sess., S. rep. 1394, Pt. I, pp. 30-52; from 1890 to 1912 on 70 manufactured commodities, U. S. Bureau of Labor Statistics, *Wholesale Prices 1890 to 1921* (Bulletin No. 32), p. 44; from 1913 to 1937 on index of 582 finished products as currently published by U. S. Bureau of Labor Statistics. Each of the series has been adjusted to 1936 as a base.

STATISTICAL TABLES

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INDEXES OF WEEKLY WAGES AND OF WHOLESALE PRICES
OF MANUFACTURED PRODUCTS, 1870-1937

—Continued

Year	Weekly Wages ^a	Prices of Manufactured Products ^b	Wage Index Divided by Price Index	Year	Weekly Wages ^a	Prices of Manufactured Products ^b	Wage Index Divided by Price Index
1910...	50.5	85.9	58.8	1925...	115.8	122.7	94.4
1911...	48.6	78.7	61.8	1926...	117.2	122.0	96.1
1912...	49.8	84.4	59.0	1927...	117.6	115.9	101.5
1913...	52.3	84.6	61.8	1928...	118.7	117.0	101.5
1914...	52.5	82.7	63.5	1929...	119.1	115.2	103.4
1915...	51.4	84.0	61.2	1930...	110.8	107.3	103.3
1916...	58.9	100.4	58.7	1931...	99.7	93.9	106.2
1917...	70.0	133.2	52.6	1932...	81.0	85.7	94.5
1918...	88.7	152.1	58.3	1933...	78.6	86.0	91.4
1919...	104.7	159.3	65.7	1934...	87.3	95.4	91.5
1920...	124.6	182.7	68.2	1935...	92.5	100.2	92.3
1921...	106.9	126.0	84.8	1936...	100.0	100.0	100.0
1922...	103.2	117.7	87.7	1937...	110.4	106.3	103.9
1923...	113.5	121.0	93.8				
1924...	113.8	117.4	96.9				

2. INDEXES OF WEEKLY WAGES AND OF WHOLESALE PRICES OF
RAW MATERIALS AND MANUFACTURED PRODUCTS
1890-1913
(1913=100)

Year	Weekly Wages ^a	Wholesale Prices ^b			
		Raw Commodities ^c		Manufactured Commodities ^d	
		Index Numbers	Wage Index Divided by Price Index	Index Numbers	Wage Index Divided by Price Index
1890.....	76.0	69.3	109.7	86.6	87.8
1891.....	76.5	68.3	112.0	85.6	89.4
1892.....	77.2	62.0	124.5	81.5	94.7
1893.....	72.7	64.2	113.2	83.2	87.4
1894.....	66.8	56.8	117.6	72.4	92.3
1895.....	72.0	60.5	119.0	72.5	99.3
1896.....	70.2	56.2	124.9	70.1	100.1
1897.....	70.6	57.2	123.4	71.2	99.2
1898.....	71.3	61.2	116.5	73.6	96.9
1899.....	73.7	67.4	109.3	78.5	93.9
1900.....	75.3	72.8	103.4	83.0	90.7
1901.....	78.9	72.2	109.3	81.5	96.8
1902.....	81.8	77.1	106.1	86.9	94.1
1903.....	84.1	76.5	109.9	85.9	97.9
1904.....	82.5	79.1	104.3	86.2	95.7
1905.....	85.5	78.2	109.3	88.5	96.6
1906.....	87.5	81.3	107.6	87.5	100.0
1907.....	90.3	86.6	104.3	94.2	95.9
1908.....	82.2	83.7	98.2	92.8	88.6
1909.....	89.6	91.1	98.4	97.8	91.6
1910.....	96.5	95.4	101.2	101.4	95.2
1911.....	92.9	86.3	107.6	92.9	100.0
1912.....	95.2	95.1	100.1	99.7	95.5
1913.....	100.0	100.0	100.0	100.0	100.0

^a Based on Paul Douglas, *Real Wages in the United States*, p. 246. See note a, table 1.

^b U. S. Bureau of Labor Statistics, *Wholesale Prices, 1890-1926* (Bulletin No. 440), p. 29.

^c 27 price series.

^d 70 price series.

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INDEXES OF WEEKLY WAGES AND OF WHOLESALE PRICES OF RAW MATERIALS AND MANUFACTURED PRODUCTS—Continued
1913-37
(1936=100)

Year	Weekly Wages	Wholesale Prices*			
		Raw Materials†		Finished Products‡	
		Index Numbers	Wage Index Divided by Price Index	Index Numbers	Wage Index Divided by Price Index
1913.....	52.3	86.1	60.7	84.6	61.8
1914.....	52.5	84.6	62.1	82.7	63.5
1915.....	51.4	84.1	61.1	84.0	61.2
1916.....	58.9	103.4	57.0	100.4	58.7
1917.....	70.0	153.4	45.6	133.2	52.6
1918.....	88.7	170.0	52.2	152.1	58.3
1919.....	104.7	182.6	57.3	159.3	65.7
1920.....	124.6	190.0	65.6	182.7	68.2
1921.....	106.9	110.5	96.7	126.0	84.8
1922.....	103.2	120.2	85.9	117.7	87.7
1923.....	113.5	123.3	92.1	121.0	93.8
1924.....	113.8	122.2	93.1	117.4	96.9
1925.....	115.8	133.5	86.7	122.7	94.4
1926.....	117.2	125.2	93.6	122.0	96.1
1927.....	117.6	120.8	97.4	115.9	101.5
1928.....	118.7	124.0	95.7	117.0	101.5
1929.....	119.1	122.0	97.6	115.2	103.4
1930.....	110.8	105.5	105.0	107.3	103.3
1931.....	99.7	82.1	121.4	93.9	106.2
1932.....	81.0	69.0	117.4	85.7	94.5
1933.....	78.6	70.7	111.2	86.0	91.4
1934.....	87.3	85.9	101.6	95.4	91.5
1935.....	92.5	96.5	95.9	100.2	92.3
1936.....	100.0	100.0	100.0	100.0	100.0
1937.....	110.4	106.1	104.1	106.3	103.9

* U. S. Bureau of Labor Statistics, *Wholesale Prices*, monthly bulletins.
† 109 quotations.
‡ 582 quotations.

3. INDEXES OF WEEKLY WAGES AND OF WHOLESALE PRICES OF WINDOW
GLASS AND PRINT CLOTH, 1870-1937
(1936=100)

Year	Weekly Wages ^a	Window Glass ^b			Print Cloth ^b		
		Price per 50 Square Feet		Wage Index Divided by Price Index	Price per Yard		Wage Index Divided by Price Index
		Dollars	Index Numbers		Dollars	Index Numbers	
1870...	42.8	2.790	97.9	43.7	.066	153.5	27.9
1871...	42.8	2.960	103.9	41.2	.068	158.1	27.1
1872...	43.1	4.670	163.9	26.3	.072	167.4	25.7
1873...	43.3	3.890	136.5	31.7	.063	146.5	29.6
1874...	42.8	3.950	138.6	30.9	.052	120.9	35.4
1875...	41.4	3.190	112.0	37.0	.050	116.3	35.6
1876...	39.4	3.530	123.9	31.8	.037	86.0	45.8
1877...	37.5	2.940	103.2	36.3	.039	90.7	41.3
1878...	35.7	2.500	87.8	40.7	.031	72.1	49.5
1879...	35.0	2.490	87.4	40.0	.034	79.1	44.2
1880...	35.7	2.780	97.6	36.6	.043	100.0	35.7
1881...	36.7	2.740	96.2	38.1	.036	83.7	43.8
1882...	37.9	2.910	102.1	37.1	.035	81.4	46.6
1883...	38.7	2.830	99.3	39.0	.033	76.7	50.5
1884...	39.0	3.190	112.0	34.8	.031	72.1	54.1
1885...	38.4	3.620	127.1	30.2	.028	65.1	59.0
1886...	38.1	3.620	127.1	30.0	.030	69.8	54.6
1887...	38.9	1.930	67.7	57.5	.031	72.1	54.0
1888...	39.0	2.010	70.6	55.2	.034	79.1	49.3
1889...	39.3	1.750	61.4	64.0	.036	83.7	47.0
1890...	39.7	1.786	62.7	63.3	.031	72.1	55.1
1891...	40.0	1.770	62.1	64.4	.027	62.8	63.7
1892...	40.4	1.595	56.0	72.1	.031	72.1	56.0
1893...	38.0	1.710	60.0	63.3	.030	69.8	54.4
1894...	34.9	1.633	57.3	60.9	.026	60.5	57.7
1895...	37.6	1.392	48.9	76.9	.027	62.8	59.9
1896...	36.7	1.600	56.2	65.3	.024	55.8	65.8
1897...	36.9	1.963	68.9	53.6	.023	53.5	69.0
1898...	37.3	2.343	82.2	45.4	.019	44.2	84.4
1899...	38.6	2.399	84.2	45.8	.025	58.1	66.4
1900...	39.4	2.319	81.4	48.4	.029	67.4	58.5
1901...	41.3	3.282	115.2	35.9	.026	60.5	68.3
1902...	42.8	2.565	90.0	47.6	.029	67.4	63.5
1903...	44.0	2.160	75.8	58.0	.030	69.8	63.0
1904...	43.2	2.328	81.7	52.9	.031	72.1	59.9

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 INDEXES OF WEEKLY WAGES AND OF WHOLESALE PRICES OF WINDOW
 GLASS AND PRINT CLOTH, 1870-1937—Continued

Year	Weekly Wages ^a	Window Glass ^b			Print Cloth ^b		
		Price per 50 Square Feet		Wage Index Divided by Price Index	Price per Yard		Wage Index Divided by Price Index
		Dollars	Index Numbers		Dollars	Index Numbers	
1905...	44.7	2.137	75.0	59.6	.029	67.4	66.3
1906...	45.8	2.256	79.2	57.8	.033	76.7	59.7
1907...	47.2	2.242	78.7	60.0	.044	102.3	46.1
1908...	43.0	1.881	66.0	65.2	.031	72.1	59.6
1909...	46.9	1.849	64.9	72.3	.033	76.7	61.1
1910...	50.5	2.338	82.1	61.5	.036	83.7	60.3
1911...	48.6	1.796	63.0	77.1	.032	74.4	65.3
1912...	49.8	1.785	62.7	79.4	.035	81.4	61.2
1913...	52.3	2.221	78.0	67.1	.035	81.4	64.3
1914...	52.5	2.168	76.1	69.0	.030	69.8	75.2
1915...	51.4	2.423	85.0	60.5	.029	67.4	76.3
1916...	58.9	2.494	87.5	67.3	.042	97.7	60.3
1917...	70.0	3.325	116.7	60.0	.066	153.5	45.6
1918...	88.7	5.689	199.7	44.4	.113	262.8	33.8
1919...	104.7	6.226	218.5	47.9	.099	230.2	45.5
1920...	124.6	6.555	230.1	54.2	.126	293.0	42.5
1921...	106.9	5.614	197.1	54.2	.051	118.6	90.1
1922...	103.2	3.523	123.7	83.4	.066	153.5	67.2
1923...	113.5	3.612	126.8	89.5	.075	174.4	65.1
1924...	113.8	3.459	121.4	93.7	.068	158.1	72.0
1925...	115.8	3.095	108.6	106.6	.066	153.5	75.4
1926...	117.2	3.110	109.2	107.3	.052	120.9	96.9
1927...	117.6	2.980	104.6	112.4	.055	127.9	91.9
1928...	118.7	3.080	108.1	109.8	.058	134.9	88.0
1929...	119.1	3.420	120.0	99.3	.052	120.9	98.5
1930...	110.8	3.420	120.0	92.3	.042	97.7	113.4
1931...	99.7	2.068	72.6	137.3	.033	76.7	130.0
1932...	81.0	2.146	75.3	107.6	.026	60.5	133.9
1933...	78.6	2.300	80.7	97.4	.038	88.4	88.9
1934...	87.3	2.165	76.0	114.9	.048	111.6	78.2
1935...	92.5	2.433	85.4	108.3	.049	114.0	81.1
1936...	100.0	2.849	100.0	100.0	.043	100.0	100.0
1937...	110.4	2.887	101.3	109.0	.048	111.6	98.9

^a See note a, table 1.

^b 1870-89: 52 Cong. 2 sess., S. rep. 1394 (Report by Mr. Aldrich from the Committee on Finance), Pt. II, pp. 152, 241-42. 1890-1937: Bureau of Labor Statistics. Owing to changes in the type of product for which the price quotations have been made, it has been necessary to adjust the dollar values in earlier years in such a way as to make the series comparable.

4. INDEXES OF COMMODITY PRICES AND OF INCOME OF MANUFACTURING CORPORATIONS, 1918-35
(1929=100)

Year	Wholesale Prices of Finished Products ^a	Gross Income of Manufacturing Corporations ^b	Net Income of Manufacturing Corporations ^b
1918.....	132.0	61.2	102.9
1919.....	138.2	72.5	110.1
1920.....	158.5	78.5	74.5
1921.....	109.3	53.3	- 2.7
1922.....	102.1	61.9	59.9
1923.....	105.0	77.9	81.0
1924.....	101.9	74.7	62.7
1925.....	106.5	84.3	84.0
1926.....	105.8	86.6	84.2
1927.....	100.5	88.3	70.1
1928.....	101.5	93.3	88.7
1929.....	100.0	100.0	100.0
1930.....	93.1	84.4	25.4
1931.....	81.5	61.0	-18.7
1932.....	74.4	44.3	-41.0
1933.....	74.6	48.7	4.6
1934.....	82.8	56.9	22.2
1935.....	87.0	66.1	40.9

^a Bureau of Labor Statistics, converted from 1926 base.

^b Computed from dollar figures of gross income and net income contained in the annual *Statistics of Income* of the Internal Revenue Bureau.

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5. INDEXES OF WHOLESALE PRICES OF FINISHED PRODUCTS AND OF NET INCOME OF ALL CORPORATIONS, 1909-35, AND OF NET INCOME OF MANUFACTURING CORPORATIONS, 1918-35 (1929=100)

Year	Wholesale Prices of Finished Products ^a	Net Income of All Corporations ^b	Net Income of Manufacturing Corporations ^c
1909.....	71.9	40.0	...
1910.....	74.5	43.0	...
1911.....	68.3	40.1	...
1912.....	73.2	47.5	...
1913.....	73.4	53.9	...
1914.....	71.7	45.1	...
1915.....	72.9	60.8	...
1916.....	87.1	92.8	...
1917.....	115.6	115.6	...
1918.....	132.0	87.8	102.9
1919.....	138.2	96.3	110.1
1920.....	158.5	67.2	74.5
1921.....	109.3	5.2	- 2.7
1922.....	102.1	54.6	59.9
1923.....	105.0	72.2	81.0
1924.....	101.9	61.4	62.7
1925.....	106.5	87.2	84.0
1926.....	105.8	85.9	84.2
1927.....	100.5	74.5	70.1
1928.....	101.5	94.1	88.7
1929.....	100.0	100.0	100.0
1930.....	93.1	17.7	25.4
1931.....	81.5	-37.6	-18.7
1932.....	74.4	-64.6	-41.0
1933.....	74.6	-29.1	4.6
1934.....	82.8	1.1	22.2
1935.....	87.0	19.4	40.9

^a See note *b*, table 1.

^b Computed from dollar figures contained in *Statistics of Income* of the Bureau of Internal Revenue. The figures for the years 1909-15 do not subtract the deficits of corporations reporting no net income, and are therefore not comparable with the later figures.

^c Computed from dollar figures contained in *Statistics of Income* of the Bureau of Internal Revenue.

APPENDIX C

INDUSTRIAL CONSOLIDATIONS, 1898-1902^a
(With capitalization of 5 million dollars or over)

Year	Company	Capitalization (in thousands)	Year	Company	Capitalization (in thousands)	
1898	American Fisheries	\$10,000	1899	(cont.)		
	American Linseed	33,500		Mount Vernon-Woodberry Cotton Duck	9,500	
	American Steel and Wire	24,000		National Carbon	10,000	
	American Thread	12,000		National Casket	6,000	
	American Tin Plate	50,000		National Enameling and Stamping	30,000	
	Atlantic Snuff	10,000		National Salt	12,000	
	Continental Tobacco	75,000		National Screw	10,000	
	Federal Steel	100,000		National Steel	59,000	
	International Paper	45,000		National Straw Board	6,000	
	International Silver	20,000		National Tube	80,000	
	National Biscuit	55,000		New England Cotton Yarn	10,000	
	Otis Elevator	11,000		Niles-Bement-Pond	8,000	
	Union Carbide	6,000		Pacific American Fisheries	5,000	
	Westinghouse Air Brake	11,000		Pullman	74,000	
	1899	Amalgamated Copper		75,000	Republic Iron and Steel	55,000
		American Agricultural Chemical		40,000	Royal Baking Powder	20,000
American Bicycle		30,000	Rubber Goods Manufacturing	50,000		
American Car and Foundry		60,000	Standard Metal	5,200		
American Chiclé		9,000	Standard Sanitary Manufacturing	5,000		
American Felt		5,000	Union Bag and Paper	27,000		
American Grass Twine		15,000	United Fruit	20,000		
American Hide and Leather		35,000	United Shoe Machinery	25,000		
American Ice		60,000	United States Cast Iron Pipe and Foundry	30,000		
American Malting		30,000	United States Dyewood and Extract	10,000		
American Plumbing Supply and Lead		35,000	United States Flour Milling	25,000		
American Pneumatic Service		15,000	United States Glue	35,000		
American Radiator		10,000	United States Varnish	36,000		
American Railway Equipment		22,000	United States Worsted	36,000		
American School Furniture		10,000	United Zinc and Lead	6,000		
American Shipbuilding		0,000	1900	American Brass	10,000	
American Smelting and Refining		65,000		American Bridge	70,000	
American Steel Hoop		33,000		American Clay Manufacturing	10,000	
American Steel and Wire		90,000		American Rice Growers' Distributing	15,000	
American Switch		11,000		American Sheet Steel	52,000	
American Vinegar		11,000		Consolidated Ry. Electric Car Lighting and Equipment	16,000	
American Window Glass		17,000		Crucible Steel Company of America	50,000	
American Woolen		65,000		International Fire Engine	9,000	
American Writing Paper		25,000		National Roofing and Corrugating	5,000	
Asphalt Company of America		30,000		National Starch	9,500	
Borax Consolidated, Ltd.		6,750		Shelby Steel Tube	15,000	
Central Foundry		14,000		United Metals Selling	5,000	
Consolidated Rubber Tire		10,000	1901	Allis-Chalmers	50,000	
Consolidated Street Car		18,000		Amalgamated Copper	155,000	
Continental Cotton Oil		6,000		American Can	88,000	
Diamond Match		15,000				
Distilling Company of America		85,000				
Federal Printing Ink		20,000				
Federal Sewer Pipe	25,000					
General Ariato	5,000					
General Chemical	25,000					
Great Lakes Towing	5,000					
International Car Wheel	15,000					
International Steam Pump	27,500					

^a From list compiled by Myron W. Watkins, *Industrial Combinations and Public Policy*, pp. 310-23.

INDUSTRIAL CONSOLIDATIONS

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INDUSTRIAL CONSOLIDATIONS, 1898-1902—Continued

Year	Company	Capital- ization (in thou- sands)	Year	Company	Capital- ization (in thou- sands)
1901	(cont.)		1902	American Barrel and Package..	20,000
	American Laundry Machinery			American Hominy.....	5,000
	Mfg.	16,000		American Steel Foundries.....	40,000
	American Locomotive Works... ..	50,000		Butterick.....	12,000
	American Smelting and Refining	100,000		Consolidated Naval Stores.....	13,000
	American Steel Castings	15,000		Corn Products.....	80,000
	American Stove.....	5,000		E. I. du Pont de Nemours.....	20,000
	Chicago Pneumatic Tool.....	5,000		Harbinson-Walker Refractories.	22,250
	Consolidated Railway Light and			International Harvester.....	120,000
	Refrigerating	22,000		International Mercantile Ma-	
	Consolidated Tobacco	30,000		rine.....	120,000
	Eastman Kodak	35,000		International Nickel.....	24,000
	International Salt.....	30,000		National Candy.....	9,000
	United States Cotton Duck Cor-			National Fireproofing.....	12,500
	poration.....	50,000		Railway Steel Spring.....	20,000
	United States Steel Corporation	950,000		United States Gypsum.....	7,500
				United States Shipbuilding....	45,000

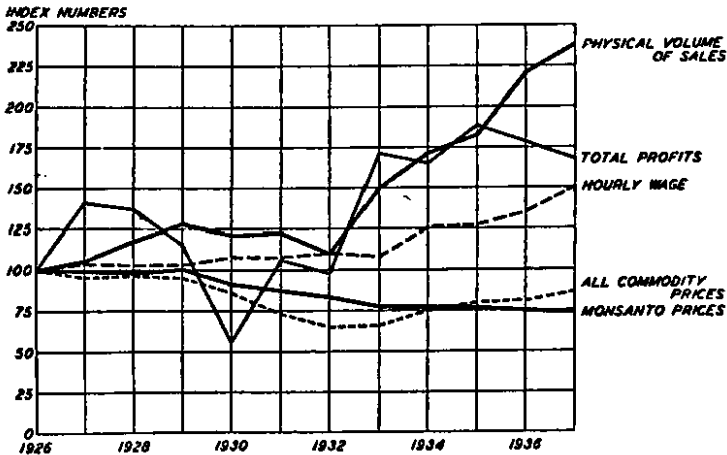
APPENDIX D

FOUR ILLUSTRATIVE CASES

In general, the analysis developed in this book lends itself to qualitative rather than quantitative treatment. However, it has seemed worth while to select four cases representing several concrete situations in which business concerns have made available the data showing lowered prices and increasing volume in graphic form.

CHEMICALS

On page 263 we have quoted the views of the president of the Monsanto Chemical Company as to their policy of lowering prices as far as costs permit as a means of expanding sales and enlarging the purchasing power of consumers. In the annual report of the company for 1937 (page 7), the results of this policy are presented graphically in a chart entitled, "Sales Volume, Price, and Wage Trends." This chart is reproduced below, redrawn to conform to our style of presentation. The index numbers on which it was based have kindly been supplied by



Year	Physical Volume of Sales	Monsanto Prices	All Commodity Prices	Total Profits ^a	Hourly Wage
1926.....	100.0	100.0	100.0	100.0	100.0
1927.....	105.6	99.5	95.4	141.4	103.6
1928.....	117.4	98.3	96.7	137.4	102.9
1929.....	127.3	100.6	95.3	115.6	103.2
1930.....	120.9	91.5	86.4	56.2	107.8
1931.....	122.5	87.5	73.0	106.0	107.4
1932.....	109.4	83.3	64.8	97.6	109.9
1933.....	149.4	77.3	65.9	171.4	108.0
1934.....	171.1	76.9	74.9	164.9	125.9
1935.....	181.9	76.3	80.0	188.1	126.9
1936.....	221.2	74.7	80.9	177.9	134.8
1937.....	237.9	73.7	86.4	168.4	150.9

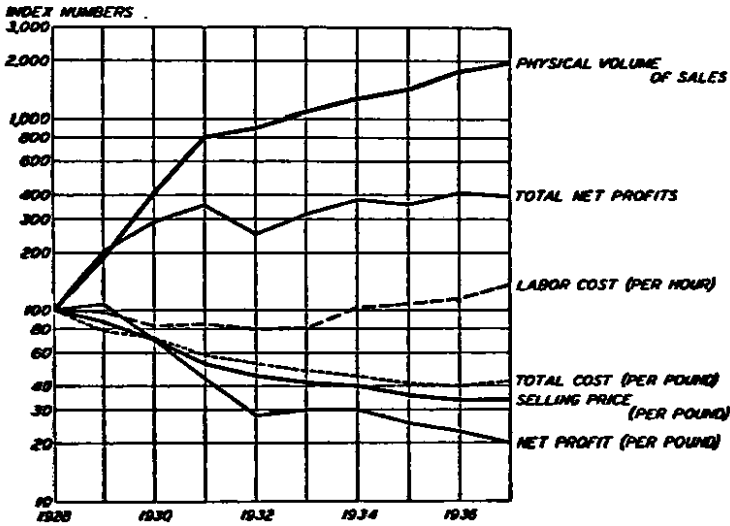
^a Ratio of gross income (net profit on company's operations plus other income) to total assets.

the company and are given in the accompanying table. One line is added to show total profits as reported in the annual earnings statements of the company.

A PACKAGING MATERIAL

Our second illustration also concerns a chemical company but relates to a single commodity (discussed on page 115) rather than to its whole line of products. While this company has patents covering certain relatively recent improvements in the manufacture of this commodity, the process is licensed by them to the manufacturers of other analogous products. They have no monopoly of the market, but compete with innumerable older products in the same general field and with a large number of cheaper alternatives or substitutes. In fact, it may be pointed out that the work done by this company in raising standards in the display and protection of merchandise has tended to enlarge the business even of competing producers and products. Likewise, they are developing new uses for their products in fields far removed from that of the packaging of goods.

One of the most interesting phases of this expansion has been in the wrapping of separate units of dry goods. Wrapping such goods in a transparent film not only



Year	Physical Volume of Sales	Net Average Selling Price Per Pound	Total Cost Per Pound	Net Profit Per Pound	Total Net Profits	Labor Cost Per Hour
1928.....	100	100	100	100	100	100
1929.....	189	88	78	107	202	98
1930.....	409	71	72	71	289	83
1931.....	809	53	58	44	354	85
1932.....	896	46	55	28	252	79
1933.....	1,072	42	48	30	321	80
1934.....	1,268	40	45	30	381	103
1935.....	1,408	36	41	26	360	108
1936.....	1,780	34	40	23	410	115
1937.....	1,959	34	42	20	394	136

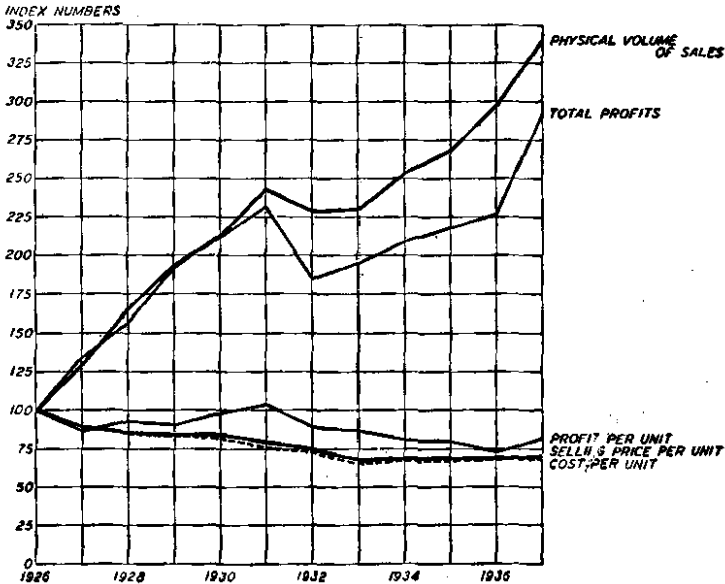
improves their appearance but avoids substantial loss from soiling. This waste is not serious in the higher class shops with glass-enclosed shelves and a clientele who

would be unlikely to soil the merchandise. Even if an occasional shirt or suit of pajamas has to be relaundersed or sold at a marked-down price, the loss is not severe on high-priced lines. But where the lowest priced goods are displayed on open counters and pawed over by many hands, the loss is both rapid and severe as a percentage of the value of the article. Hence there has been a quick response of sales in the lowest price market as the price of the commodity was cut in half during a five-year period.

The figures for cost, volume, price, and related matters as furnished by the company are presented in the table on the opposite page, together with a chart showing them graphically.

PRODUCT "X"

Third, we present below and on page 298 a chart and table covering one of the products which has been dis-



Year	Physical Volume of Sales	Selling Price Per Unit	Cost Per Unit	Profit Per Unit	Total Profits
1926.....	100.0	100.0	100.0	100.0	100.0
1927.....	129.3	89.2	89.6	86.1	133.6
1928.....	165.7	85.3	84.3	92.7	156.3
1929.....	193.5	83.8	82.9	90.3	191.8
1930.....	212.7	83.8	81.8	98.2	211.8
1931.....	242.9	78.8	75.5	103.6	231.5
1932.....	228.6	74.7	72.7	89.1	184.4
1933.....	230.3	67.8	65.2	86.7	194.8
1934.....	253.3	68.6	67.0	80.6	209.2
1935.....	268.4	68.6	67.1	79.4	218.2
1936.....	297.1	68.6	68.0	72.7	226.7
1937.....	339.2	70.0	68.5	81.2	292.1

cussed earlier in the book, but which must here remain anonymous. The figures as to unit cost, selling price, and volume of sales relate to several of the most representative brands manufactured by this company.

The index numbers of cost and selling price are to be considered in the light of three facts: first, over the period shown by the chart there have been numerous substantial improvements in the quality of the product; second, there have also been substantial increases in the rates of workers' wages; third, the company calls attention to the fact that the cost figures do not include federal and state taxes, which have shown numerous increases during these years.

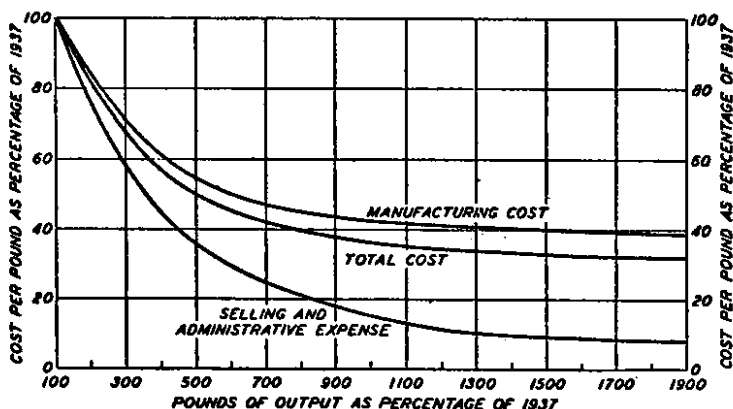
COOKING UTENSILS

Our fourth case differs considerably in form and circumstances from the other three. Whereas they present actual experience with a varied line of products over the past dozen or fifteen years, this case has to do with a single minor product and relates to the future. The company in considering price and production policy reviews the following facts.

Some years ago, in connection with its research work, this company discovered that it could use for kitchen

utensils a material which had not previously been so employed. This material presented distinct advantages in terms of appearance, cleanliness, and efficiency, but was very expensive as compared with conventional utensils. It was sold in hardware and department stores, with one of the simpler articles priced at about \$1.00. The new line was reasonably profitable to the company but did not develop sufficient volume of output at this level of prices to permit the economies of continuous machine runs. Over a period of years, the quality of the article was further perfected and the company decided to reduce prices drastically. The dollar article was cut to 45 cents. To this reduction, there was a satisfactory response in sales, enlarging them about two and a half times.

Recently, the company has been considering the possibility of another and still more drastic reduction to bring the price to a level comparable with that of lower-priced competitive materials. Varying trade answers were found as to probable expansion if the price of the specimen article were again cut in half. Some of these estimates were as high as a six-fold or a ten-fold increase. Turning then to their production department, the officials ascertained that with such an increase, it would be possible to



Pounds of Output	Manufacturing Cost	Selling and Administrative Expense	Total Cost
100.....	100	100	100
380.....	63	50	60
750.....	46	22	40
1,080.....	42	13	35
1,900.....	39	8	32

build up this line of production into a specialized department with continuous machine runs and other economies of mass production. Such operating economy, together with the pronounced fall in overhead, would in their judgment make it profitable on the reduced price basis.

The company has kindly furnished us with the chart and accompanying figures which their production and accounting departments developed as a basis of analyzing the proposed change in price policy.

APPENDIX E

FORTUNE LOOKS AT STEEL PRICES¹

. . . Lower prices have never been a part of steel ideology, which may seem odd considering that price is the only important consideration in most steel buying. But steel men have always been afraid of cut-throat competition. Furthermore, they have never agreed with that school of economic thought, traditionally exemplified by Henry Ford . . . which insists that the soundest way to get more sales is to reduce prices. Steel men have always held that steel is so small a part of the cost of the finished articles made from it that a cut in steel prices would stimulate demand very little. The steel used in a small automobile, for instance, costs only \$31.41, or 4.6 per cent of the total cost. A 25 per cent cut in steel prices would mean only a 1.15 per cent cut in automobile costs. The demand for steel, therefore, fluctuates with general business conditions and is little affected by prices. This is a perfectly good theory but it remains a theory. The steel industry has never tested it out on a large scale.

Instead, steel men have geared their industry to the philosophy of high prices and restricted production. Steel prices are set at a level high enough to yield a profit when plants are running at around 40 per cent of capacity. At 60 per cent of capacity profits become sizable, at 85 per cent they are fabulous. The "prince or pauper" nature of the steel business is largely due to this price policy. The industry apparently is quite satisfied with an operating rate of 60 per cent of capacity. A steel executive explained the industry's failure to raise prices last fall: "We weren't sure. If we could have seen our way clear

¹ Excerpt from "U. S. Steel II: Prices," *Fortune*, April 1936, pp. 130-32, 134, 136.

to higher price levels at 60 per cent, we would have jumped prices in a minute." . . .

A rolling mill is an inflexible contraption. Once it is set to turn out a product of one size, it costs a great deal of time and money to adjust the rolls for a new order with different dimensions. In the old days steel mills used to hold up small orders until they accumulated into a "rolling" big enough to be profitable. But the modern steel customer is a hand-to-mouth buyer and he can't wait on the steel mill's convenience. Hence the mills are confronted with a Hobson's choice: they can either roll small orders as they come in or they can pile up large and costly inventories of stock sizes. "Under such conditions," recently complained Myron Taylor, "manufacturing is expensive."

It seems strange that, in an industry where the bigger an order is, the cheaper it can be rolled, it has never been customary to give *specified* discounts for quantity orders. Cold-rolled bars are the only type of steel sold this way. Last fall quantity discounts were experimentally extended to hot-rolled bars as well. If this works out, such discounts will be applied to other products, probably first to sheet and strip steel. The great difficulty is that what would be a big order to a small mill might be a small order to Gary or Homestead. Discounts could be graduated according to the size of the mill of course, but this would penalize the big mills. And it would break into bits the united front on price that has been built up under the basing-point system.

But while quantity discounts can't be given officially, in practice they are given, and given frequently. Economic pressure for them is too strong to be curbed by any artificial price system. . . . There are, in effect, two price systems in steel. One is open, public, unyielding. This is the bleak prospect that the average consumer faces. But the big consumers buy their steel under another system, an unofficial and undercover business of concessions from

the published basing-point prices. Under this system the base price is merely a mark to be shot at, and the only question is how much it will be shaded. These more fortunate buyers are those who possess some form of bargaining power: reciprocal buying, strong financial connections, personal influence, and, most important of all, the ability to place big orders. How much steel is sold at shaded prices is a question—since secrecy is the essence of the whole business. Undoubtedly the practice is widespread.

The whole picture is one of ambiguity and perplexity. The words of President Grace of Bethlehem come to mind: "The selling of steel in 1932 and for the years preceding had all the confusion of the selling of rugs in a Turkish street fair." The published base prices stay at the same levels for long periods of time. But every day individual bargains are struck that nullify these prices. Two buyers may buy the same amount of the same kind of steel from the same mill at widely different prices, and no one except the seller will be any the wiser. (This is an ironic commentary, by the way, on the industry's claim that under the basing-point system every buyer of steel knows just what his competitors are paying for their steel.) This kind of undercover price cutting leaves the industry on the horns of a dilemma. Only by violating its published price system can the industry allow for the natural play of economic forces. And yet such furtive price competition leads to all kinds of discrimination and confusion.

The history of steel prices since 1929 is instructive. It can be divided into three periods: pre-NRA, NRA, post-NRA. In the pre-NRA period two schools of thought were struggling within the steel industry. The orthodox school, which did all the talking, was led by the Corporation. It believed that maintaining and even increasing prices was the way to meet the drastically falling demand. At the end of 1930 it raised prices \$1 a ton in the

face of slackening demand. The financial writers forecast a speedy return of prosperity on this news. But things got worse and worse. The other school, led by . . . [the] heretical "independents," made no announcements or speeches but went out and quietly cut prices. They cut so deep that in the spring of 1931 President Farrell of the Steel Corporation was moved to give before the American Iron and Steel Institute one of the most remarkable speeches that body ever heard. For half an hour he violently denounced the price cutting that had been going on in the industry. Excerpts: "We are no longer sellers of steel; the large industries tell us what they will pay. Our commodities are sold at too low a price . . . this constant pressure on the part of buyers to ruin our business . . . this diabolical business—that is the word—the most diabolical situation that ever was perpetrated . . . it is not honest for us to go on and sell our goods below the cost of production. . . ."

President Farrell's strong language had some effect, but it was the New Deal that came to the rescue of the Corporation and its orthodox followers. Washington brought considerable pressure to get the steel industry, as a major employer of labor, to join up early under NRA. By that time President Farrell had given way to Myron Taylor, no high-price enthusiast. But the Corporation's policy could hardly be changed overnight, and besides, Mr. Taylor needed a "breathing spell" to get his leviathan into better competitive shape. He was quick to see the opportunity offered by NRA and its price-maintenance policy. Steel was one of the first major industries to rush through a code. Under the Steel Code for the first time the industry was able to enforce legally—or at least quasi-legally—a far-reaching ban on price cutting. Under the code, any producer who wanted to sell his steel below the published base price had to report his new price at once to the code authorities, who immediately published it. Violations carried a penalty of

\$10 a ton. To rob price cutting of its remaining charms, the code furthermore provided that a cut could not be put into effect until ten days after it was publicly announced and that any producer who cut his price in consideration of a customer's promise to give him a specific order after the ten-day period elapsed was also guilty of a code violation, at \$10 a ton. "With the Steel Code came a unity such as the industry never before knew," mused the editor of *Daily Metal Trade*. And Charles Schwab declared that for the first time in his half century of experience he had seen a year "when the business of the industry could be conducted on a common-sense basis."

By the time the Schechter brothers won their famous victory, the steel industry had lost its enthusiasm for the code. The ranks were closed up, the orthodox school had apparently triumphed over the price-cutting heretics, and the industry had been successfully saved from destruction. . . .

It is more than a coincidence that the revolutionary forces among steel consumers should be led by the nation's booming, successful, low-price, big-volume industry. And that the railroads, disciples of the same reactionary high-price philosophy as the steel industry, should be consistent (if somewhat reluctant at times) supporters of steel's price system. The story of rail prices . . . is the story of the most dramatic example of price rigidity in all steel history. The automobile makers, on the other hand, have long been impatient with the basing-point and open price system in steel. They have consistently and successfully pressed for lower prices. They have diverted orders from big steel companies to smaller, and presumably more amenable, producers. They have threatened to build their own steel plants. Several years ago General Motors threw the industry into a panic by dickering (unsuccessfully) for Corrigan, McKinney Steel Co. In 1933 pressure from automobile

makers forced the industry to adopt its famous Commercial Resolution No. 21, whereby steel mills shipping into Detroit (no basing point then or today) absorbed a modest amount of the freight. This cut did not apply to Toledo consumers, who have been vigorously protesting that steel moves from Pittsburgh through Toledo to be sold in Detroit at a delivered price 70 cents a ton less than the Toledo price. There are, unfortunately, no big automobile factories in Toledo.

The leader of the automobile makers in their campaign against steel prices has been Henry Ford. His head-on collision with steel was as dramatically significant as his clash with the big city bankers. It was low prices *vs.* high prices, progressive industrialism *vs.* financial conservatism. Unable to get the price concessions he wanted and anxious to have a yardstick for measuring steel prices, Ford has built himself at Dearborn a steel plant that ranks eleventh among the country's producers. Latest addition was a \$10,000,000 continuous strip rolling mill in 1935. Though Ford has his own iron mines at Iron Mountain, he buys a good deal of his ore in the market. Rigidity in steel prices is nothing compared to the rigidity in ore prices. Unabashed, Ford several years ago made a valiant attempt to break ore prices. But Mesabi ore, Ford or no Ford, has been sold at precisely \$4.50 a ton from 1929 right up to the time of writing.

Last year [1935] no other types of steel advanced so triumphantly as sheet and strip on the production front, and no other types of steel retreated so disastrously on the price front. These facts take on meaning when one considers that sheet and strip are the great automobile steels. Toward the end of last year a \$3-a-ton concession was made in sheet and strip, the first major break in steel prices in many months. It was at first limited to automobile orders, but the infection rapidly spread to other users of sheet and strip, threatens currently to prove contagious in all types of steel. This extraordinary

pressure against sheet prices is not due only to the strong bargaining position of the automobile makers. A major technological change has exerted at least as powerful a leverage.

Perhaps the most important technological advance in steel during the 20th century is the four-high continuous strip rolling mill that Naugle and Townsend worked out and sold to American Rolling Mill Co., some ten years ago. On old-style mills the sheets are rolled separately, passing back and forth between the rolls, a laborious process that requires constant reheating and much skilled labor. The continuous mill is straight-line production: an unbroken ribbon of steel passes through one stand of rolls after another, getting squeezed out thinner and longer on each successive set of rolls. The whole series of rolls must be perfectly synchronized. If a roll goes too fast it pulls the steel out too thin and eventually snaps it: if it goes too slow the ribbon of steel bunches and buckles.

A continuous strip mill is an expensive toy. It costs from \$8,000,000 to \$12,000,000 to build, rolls some 600,000 tons of steel a year, reduces costs \$6 to \$8 a ton. Labor is practically eliminated, being cut down 97 per cent. With a working force of 125 men a continuous mill can average 2,000 tons a day. To produce this on old-style sheet mills, it is estimated, would require a force of 4,500 men. Observers see "revolutionary effects" on steel labor.

But the most important change worked by the continuous mill is its effect on the industry's price structure. Over the past ten years the average production of sheet, strip, and other flat-rolled steel was 10,400,000 tons a year. Without taking into account the great numbers of old-style sheet mills still in existence, there are already enough continuous mills *alone* to produce, at capacity, 8,450,000 tons a year (of which 1,575,000 is still under construction). And the end of building new ones is not yet [1936] in sight. Furthermore, the con-

tinuous mill must be run at close to capacity to produce its great economies. There is, therefore, and there will be increasingly in the future, tremendous pressure to reduce sheet-steel prices. True to their traditional expansionist policy, the steel masters have greatly overbuilt continuous-strip capacity. But this time the effects promise to be so violent that it is difficult to see how the present steel price structure, so patiently built up and so stubbornly defended for so many years, can escape being seriously damaged. Disaster to its price system, of course, may well not mean disaster to the steel industry. On the contrary. It is quite possible, and according to many observers quite probable, that lower prices will mean enormously wider markets—extensive highways laid on steel foundations are one possibility, for example—and that this will keep the mills running at so high a rate of capacity as to more than make up for lower prices. . . .

There is a serious need for an objective study by the steel industry of its price policies. The problem is admittedly a complex one. But steel men seem to have made little effort to meet it. Some of them oppose the NRA plan because, in the words of one executive, "When you add new basing points, you add new complications." Some of them feel that since the industry has grown up under its present price system, it would be unwise to tinker with so well-established an institution. Change is admittedly uncomfortable and "complications" are to be avoided by all sensible men, but the problems remain for all that. They must be faced and solved if the industry is to get on a solid foundation again. . . .

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